

Midsummer Stranger-than-Fiction Number

August 1920

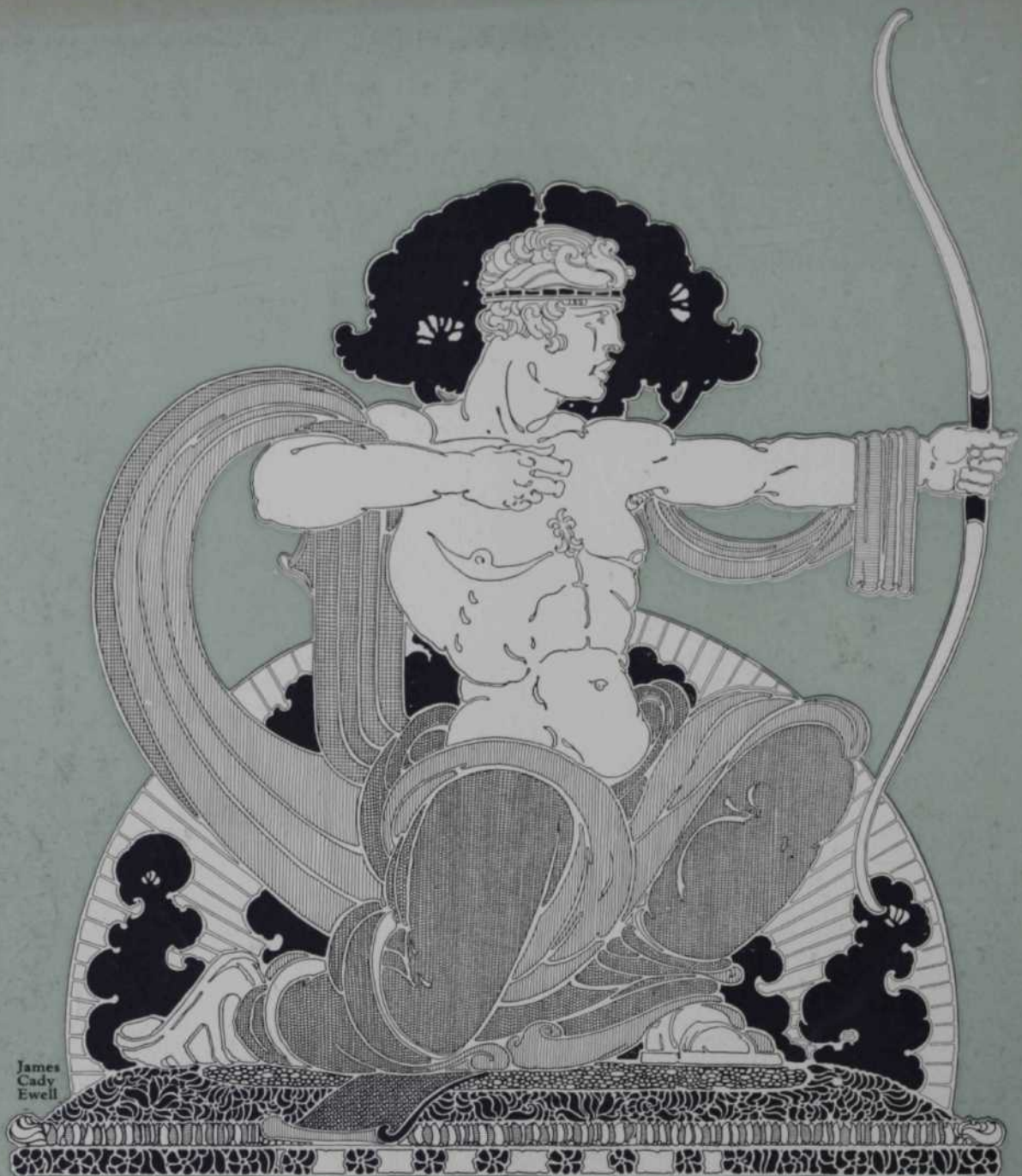
V. 8 #8

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THE CHAMBER OF COMMERCE
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THE NATION'S BUSINESS





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For Motor Trucks

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Buchanan, Michigan
Also makers of Clark Steel Disc Wheels for Motor Trucks

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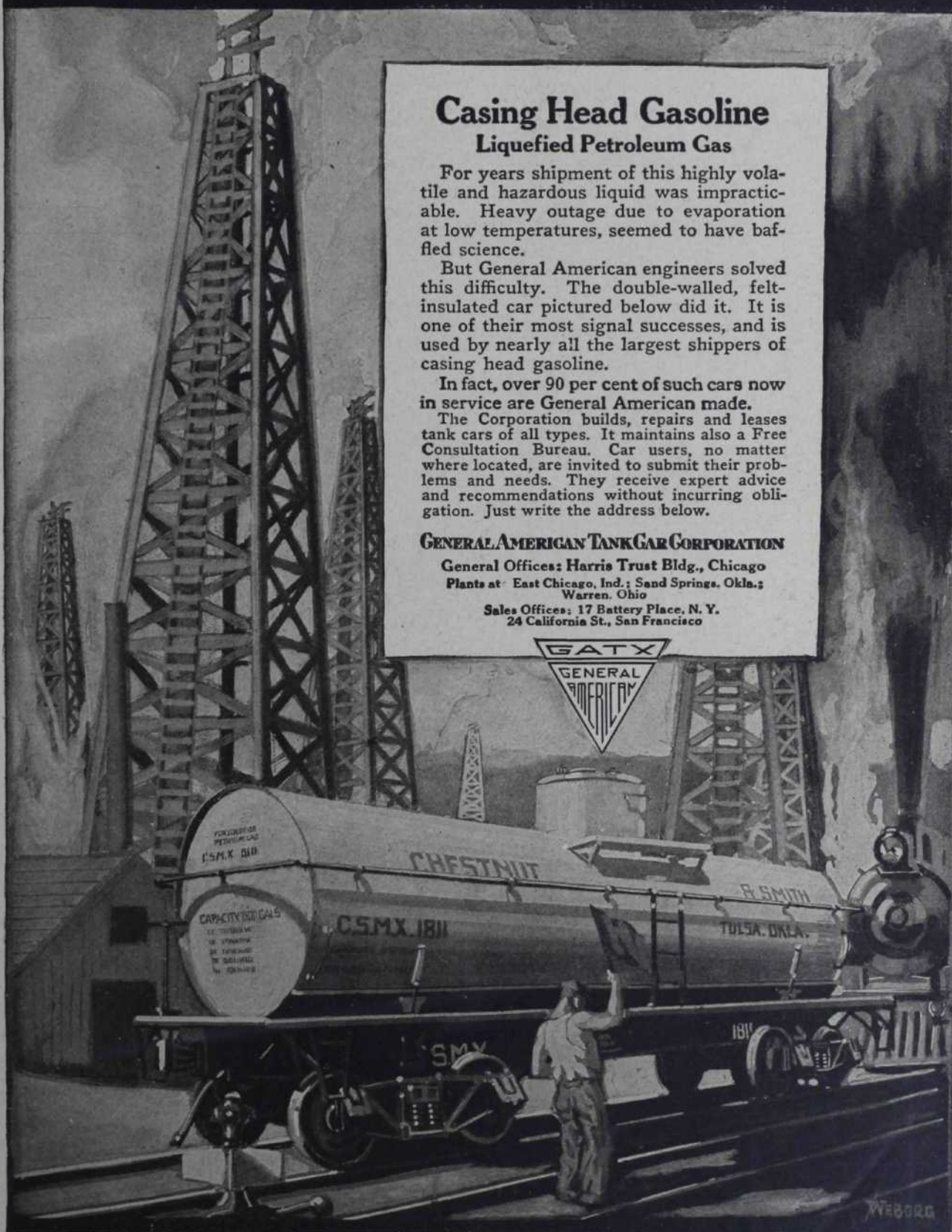
The Corporation builds, repairs and leases tank cars of all types. It maintains also a Free Consultation Bureau. Car users, no matter where located, are invited to submit their problems and needs. They receive expert advice and recommendations without incurring obligation. Just write the address below.

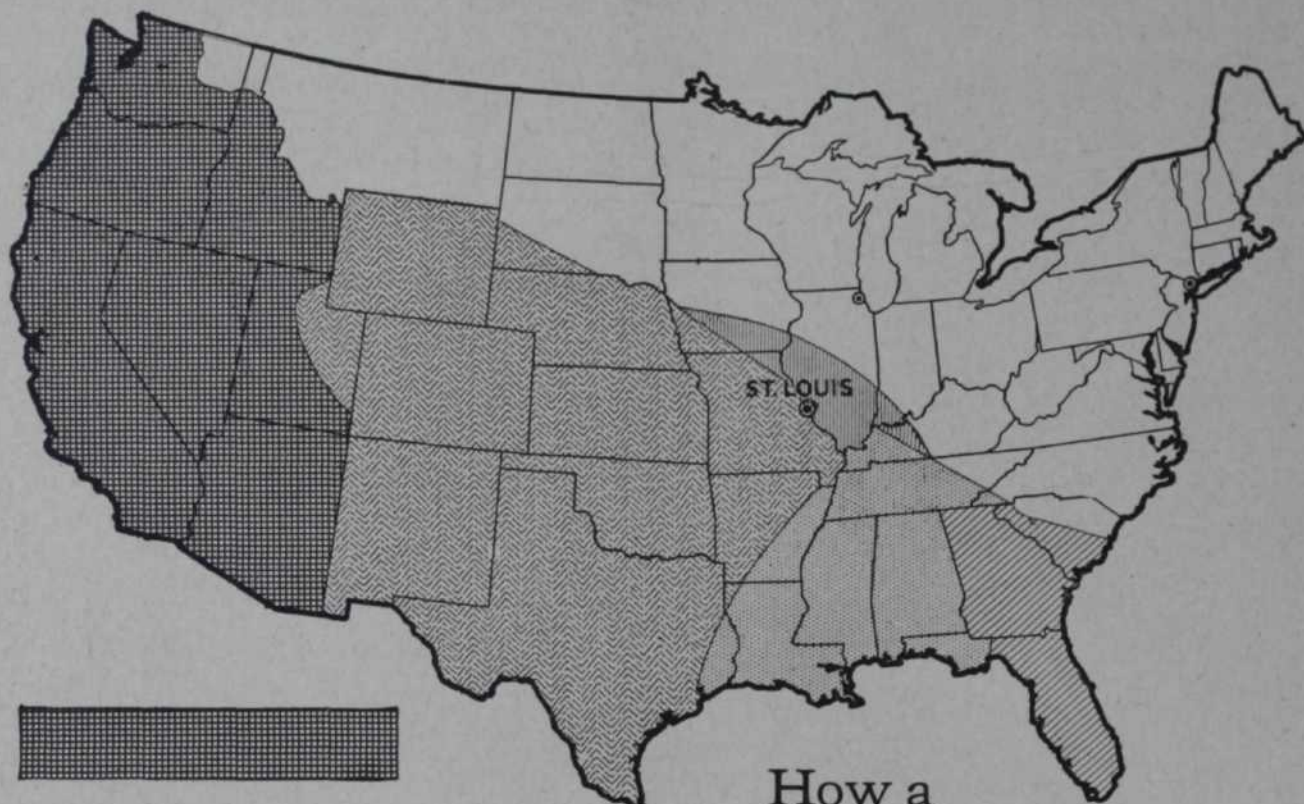
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Territory in which St. Louis freight rates are approximately 25c under Chicago and 75c to \$1.00 under New York rail rates.

Territory in which St. Louis railroad freight rates are approximately 10c to 25c under Chicago and 20c to 40c under New York rail rates.

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Look forward. Apply arithmetic to your production and distribution problems. Many business executives are looking backward today and wishing they had taken advantage of past opportunities. Look at the map. Then figure your transportation costs. If you are reaching your raw materials and your markets from the edge of things instead of from the center, arithmetic will prove that you are doing business at a disadvantage.

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Farm implements
Rubber products
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Blast furnaces
Cork products
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The booklet, "St. Louis as a Manufacturing Center," will interest you. May we send it? Address

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St. Louis Chamber of Commerce
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6" 4 PLY
GOODYEAR BLUE STREAK
INSTALLED APRIL, 1917

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The Roller Mill Drive—and the G.T.M.

Roll drives in flour mills are pretty much all alike in the strain they impose on belting. They subject both sides of the belt to contact with the pulleys, causing a flexing action that takes the life out of the average belt.

Any unusual duty is a challenge to the G.T.M.—Goodyear Technical Man—and he called on L. T. Tucker & Co., of Frankford Mills, Frankford, Mo., to see if they could not figure out together a way to more economical belt performance, over a longer period of use.

He outlined the Goodyear Analysis Plan by which Goodyear Mechanical Goods are specified exactly to the service required, so that they will not only serve the work more effectively, but contribute their proper share to the profitable operation of the entire plant. He dwelt on the established Goodyear practice of building the belt to the work to be done, with long-run economy always the object in view.

Full co-operation was given the G. T. M. in his study of the details of the drive. The miller supplemented the G. T. M.'s measurements of pulleys, center-to-center distances, and so on, with practical data about the actual running conditions. The resulting specifications first were

checked carefully, and a 35-foot, 6-inch, 4-ply Goodyear Blue Streak Belt was installed in April, 1917.

For more than three years now that Goodyear Blue Streak Belt has transmitted power on the straining roll drive without a trace of slippage, and with a minimum of stretch. Fastened with rawhide lace, it shows no signs of wear, has run trouble-free amid the ever-present dust, and has cost almost nothing for repairs. Its steadiness has assured the fine-milled quality of the flour.

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You may have a belting problem, involving either a drive or an entire plant, on which the G. T. M. could figure with profit to you. His services are at your command. Write for them, or for further information about the Goodyear Analysis Plan, to The Goodyear Tire & Rubber Company, Akron, Ohio.

BELTING • PACKING HOSE • VALVES
GOODYEAR

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*Today is the time to build for tomorrow because
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In more than forty industries far-sighted executives, realizing that production problems are becoming more complex, are combining our experience with theirs to develop a program for future betterments, including co-ordinated organization, control of production and costs, and intensive management.

Among industries we are serving at present are:—

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| Blocks and Pulleys | Glass Products | Pottery |
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| Factory Furniture | Paper Box and Cans | Textile |
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| Furniture | Pipe Mills | Varnish |

Our past experiences offer even a wider range

*The past is gone, the present will quickly slip away,
but the future offers a world of opportunities.*

WE CAN DESCRIBE OUR PLAN BRIEFLY

C. E. KNOEPPEL & CO., INC.

Industrial Engineers

"Knoepfel Organized Service"

52 Vanderbilt Avenue

New York

In this Number

Cover painting by Jerry Farnsworth and Charles A. Dunn

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IF OUR midsummer Stranger-than-Fiction number seems to peer a bit far into the future, consider the five thousand and more Jules Vernes listed by the National Research Council as working full time in the laboratories of 294 American business concerns. One company, not in the above mentioned list, by the way, employs 500 scientists and expends annually on research \$10,000,000.

How fascinating the work of this small army of industrial pioneers! What visions they see, and seeing, what a new world they live in daily! This one, spanning the age of tallow dip to tungsten, is searching for a light without heat. He is spurred on in his delving by the picture of untold millions of dollars saved to industry in energy alone if he only succeeds.

And with what a fine frenzy this one works to safeguard the food supply of generations yet unborn. He searches for a concentrated vitamin that may be added to cheaper foods. Already he has brought neutral cocoanut fat to skimmed milk and produced a milk and cream almost equal to cow's milk. Almost, for although it has the growth-maintaining quality, good for such adults as you and me, it lacks that other vitamin, growth-promoting, necessary for the youngster. But he will get it yet, and give us rich milk and cream in plenty and at cut rate prices.

This industrial scientist over here has just made cotton strong as linen, and now seeks a way to make it warm as wool. He reports that he is seven-eighths along the road. Already he is crying out to his colleague to hurry in his effort to increase the length of the cotton fiber and raise the oil content of the seed. In their joint success lies our freedom from wool twelve thousand miles away.

And the tale might run through a thousand industries from aniline to zirconium and through ten thousand phases from the substitution of domestic waxes in shoe polish manufacture to the perfecting of international communication.

The war has stimulated the where and how instinct of American business and when we once get our stride, look out! or you won't recognize the world tomorrow.

THE EDITOR.



Vol. 8

THE NATION'S BUSINESS

No. 8

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As the official magazine of the National Chamber, this publication carries authoritative notices and articles in regard to the activities of the Chamber. But in all other respects, the Chamber is not responsible for the contents of the article or for the opinion to which expression is given.





THE LIGHTS THAT DID NOT FAIL

OUR Army and Navy asked for electric lights, big and little, bright and dim, and in a hurry. MAZDA Service knew how they should be made.

There were huge and blinding search-lights, and tiny lamps to illuminate the compasses and instrument-boards of airplanes. There was a pilot-light for dirigibles, built to float upon the water, and weighing, battery and all, one pound. There were ship-lantern lights of special blue glass, of high penetrating power and low visibility, so that no lurking U-boat could catch their glow. There were red, white and blue lamps for daylight signaling. There were lamps for gun sights, and very small ones, the size of wheat-grains, for the use of surgeons. The list could be prolonged almost indefinitely.

The accumulated knowledge and technical experience of MAZDA Service, of the chemists, physicists, metallurgists and

engineers in the Research Laboratories and two score related factories, bore notable fruit in this multitude of lamps.

For more than a decade MAZDA Service has carried forward the art of electric lighting, of which the MAZDA lamp is the highest expression. From the compounding of the glass to the spinning of web-fine filaments from stubborn metal, MAZDA Service has led the way. These reserves of knowledge and experience, backed by the splendid facilities of the Research Laboratories, produced the specifications for our war lamps.

Many of them were lamps of everyday use, tried and proved fit for active duty; others were adaptations of existing types, and many were entirely new.

The war-time achievements of MAZDA Service in the development of electric lamps mean improvement and higher efficiency in peace-time lighting.

MAZDA

RESEARCH LABORATORIES OF GENERAL ELECTRIC COMPANY



CONVINCING *the* SKEPTICAL

Columbus met skepticism at every turn. He had to *prove* to a doubting audience that an egg could be made to stand on end. He had to *prove* to a doubting world that the earth is round.

Industrial Engineering, too, has had to *prove* its worth in the face of skepticism by actual demonstration. It has compelled recognition by saving money, cutting costs and checking wastes in practically every kind of business.

Never was economy of operation and reduction of overhead more needed than today. However, this urgent need itself has caused even the most farsighted business men to hesitate to employ at this time a competent Industrial Engineering service

though it may actually pay its cost in immediate savings.

But L. V. ESTES INCORPORATED are able to offer a solution to this problem. The

ESTES plan of ANALYSIS and PROGRAM will tell you where you stand. It will show you the relation between what your plant is doing and what it is capable of doing. It will unfold to you your present operating efficiency and point out where it can be improved and strengthened. All of this before obligating you to installation service.

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In one well known manufacturing plant, four months after installation was begun —

The unit cost of production had decreased 22%
Yet the pay of employees was increased 50%
And the number of units turned out was increased 95%

Here greater production was needed as well as lower costs of production. Both results were accomplished. Workmen benefited also. This is an authentic and representative case taken from the achievement records of L. V. ESTES INCORPORATED.

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1503 Century Building, Chicago

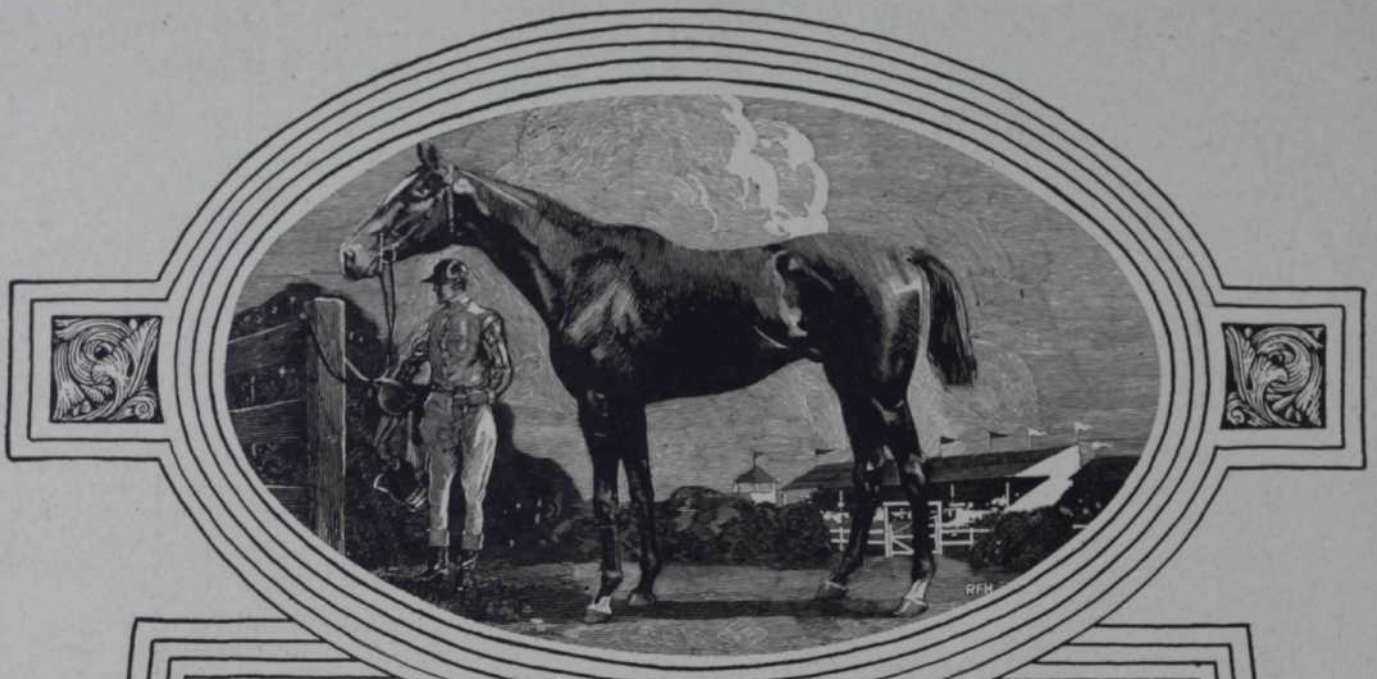
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**"Be your character
what it will - it
will be known"**

- Chesterfield

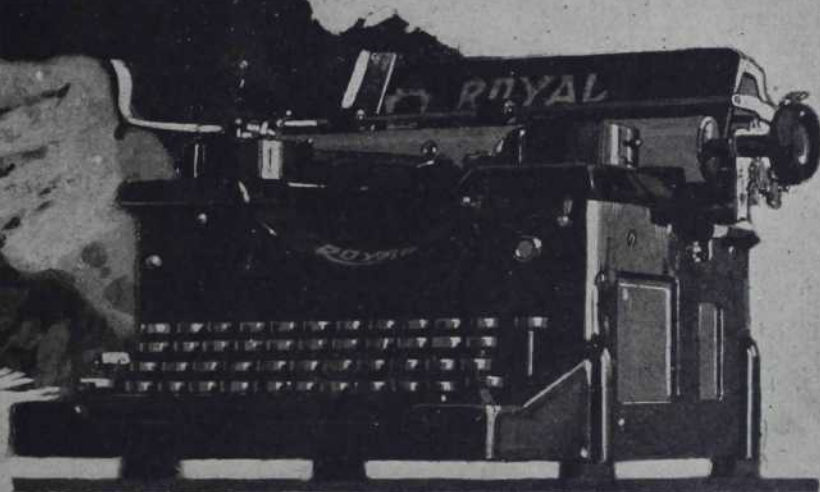
THE ROYAL TYPEWRITER has character—it has individuality. To achieve such a machine, even by placing the best materials in the hands of skilled artisans and master workmen, would be impossible without adding the vital force of personal enthusiasm which makes man's handiwork great.

Only the individual ambition of the workers to produce the best built typewriter in the world has created a machine of such quality and character. Subtract the personal touch of the master hand to the individual article and you get only machine-made mediocrity.

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The Royal Typewriter is known by the quality of its workmanship and its work and for that greater efficiency of finely built machines, against which those using less effective equipment do not successfully compete.

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CLEAN FLOORS

in American Business



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Well-kept factories give their employees CLEAN working conditions, which result in CLEAN products for their consumers.

CLEAN FLOORS are a necessary service in any successful business.

Why only the Finnell System of Power Scrubbing provides *really* CLEAN FLOORS will be told on request, directed to our Chicago offices.

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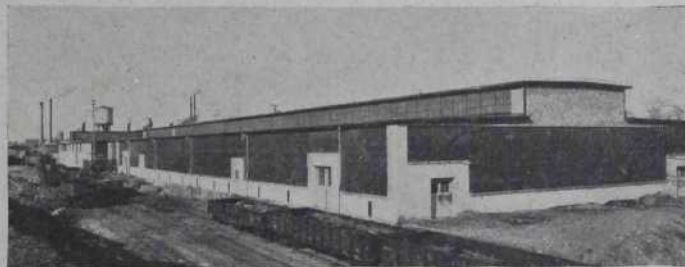
Regardless of *your* building requirements, it will pay you to read the Austin Book of Buildings—a book which every growing concern should have on file, ready for quick reference. Send for it TODAY.

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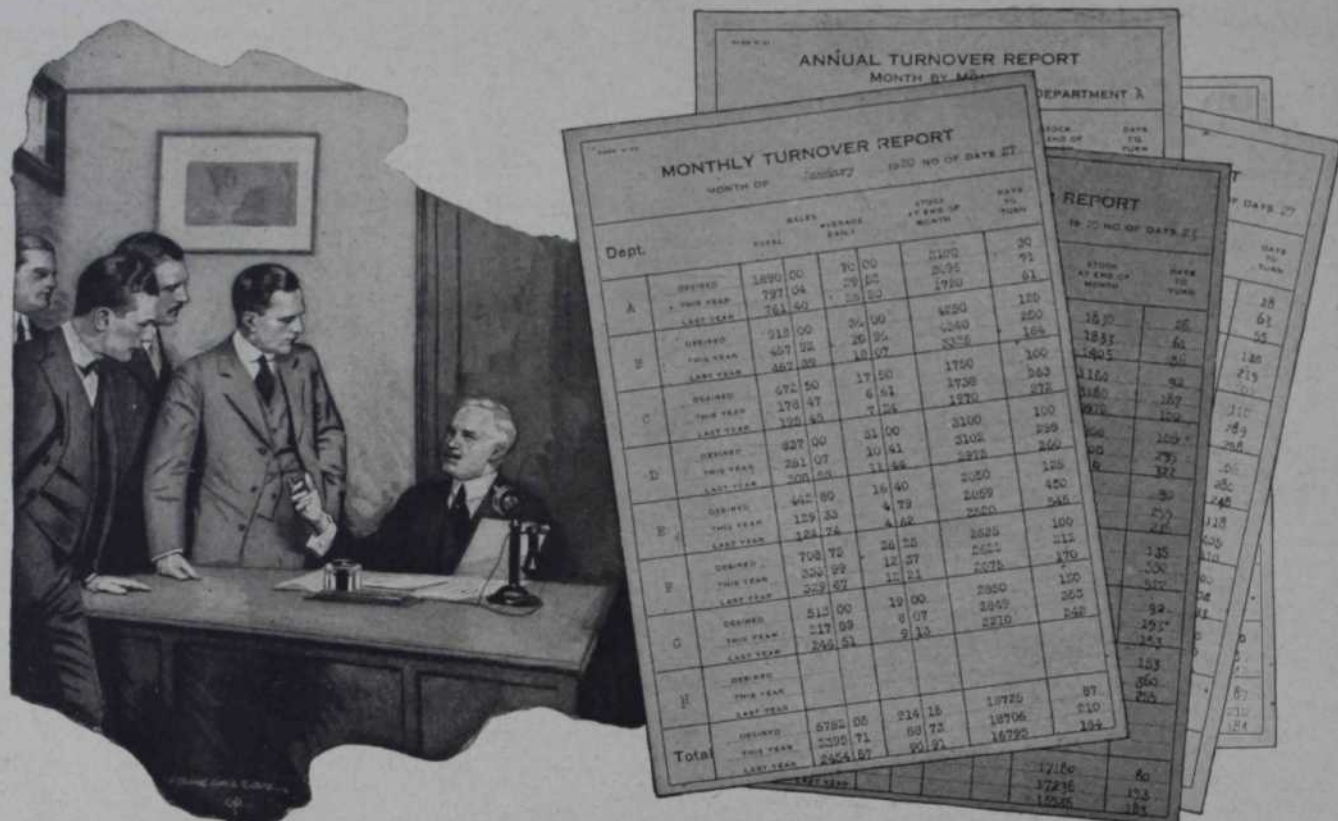
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A hat merchant may buy hats at a dollar each, sell them at three dollars, and still lose money, if his turnover is too slow—if his stocks remain too long on his shelves.

On the other hand, a small profit margin may mean big profits—if selling and re-ordering follow fast enough on each other's heels.

If your business is buying and selling, speeding up your turnover means making more money.

On this page we show a monthly sales turnover report, which will enable you to get the facts regarding turnover in every department of your business.

With this exact information at your command, you are enabled to place the situation before your department heads so clearly that they will see for themselves the necessity for greater sales effort.

Write us, and we will gladly send you this form, with a little pamphlet which fully explains its use.

We will also send you other useful forms—all of them printed on Hammermill Bond. We want you to see and feel the quality of this reliable watermarked paper—the lowest-priced standard bond paper on the market.

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The Utility Business Paper

THE NATION'S BUSINESS

A Magazine for Commerce Business Men

VOL. 8, NUMBER 8

AUGUST, 1920

Transportation's Fourth Estate

We have roads, water and rail—now comes the air! Read this story and consider seriously whether or not such sky cruisers as it describes are a safe risk for lives and money

By CLIFFORD ALBION TINKER

Lieutenant, U. S. Naval Reserve Flying Corps

WE PRESENT here a story fit to lead off our Stranger-than-Fiction Number. It is one of the most remarkable manuscripts that ever came to an editorial desk. And yet there is a danger in it. Our readers may be too well deceived.

It is the story of a board meeting which never was held. It is fiction—and yet it is fact too. While the treatment is fanciful, every detail is an accomplished fact or is under experimentation. Most of those that are not facts now will be within five years. The feasibility of the whole has been carefully checked by air experts of the United States Navy Department.

Commercial air lines in America are as sure as death and taxes.—THE EDITOR.

Minutes of the Meeting

Extracts from the minutes of a special meeting of the board of directors of the American Aerial Transport Corporation, held in the board room of the Mercer Trust Company, New York, Mr. Gordon Livingston, president of the corporation and chairman of the board of directors, presiding.

The secretary, Capt. Hector McIlvayne, formerly of the Army Air Service, read the notice convening the meeting.

THE CHAIRMAN: Recent aeronautical developments have made

this a favorable moment for our board to consider immediate steps to operate one or more transcontinental air transport lines. Study of present-day ships, equipment, and operation, together with elaborate experimentation, to be reported upon today by our engineering staff, shows that we are justified in engaging in active operations at once.

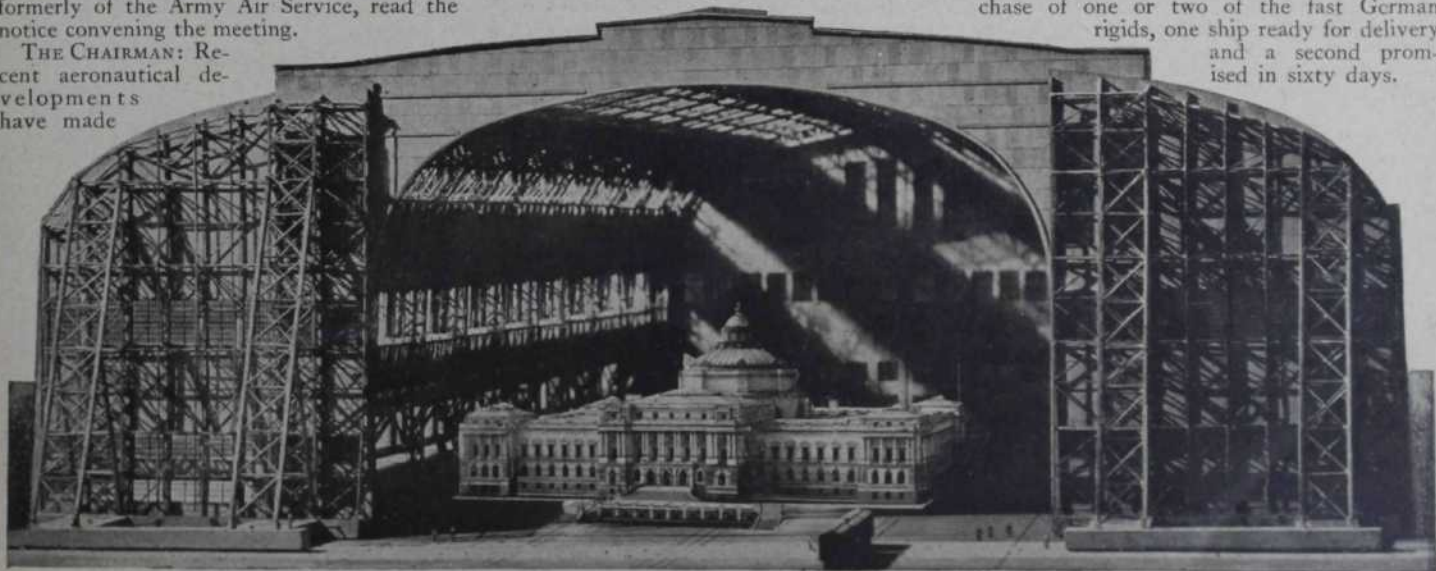
The United States promises the most lucrative field in the world for the employment of aerial transportation. Our immense populated area, with its great trade centers, tremendous urban development, and natural resources widely distributed, makes this true. Our people actually require the speedy airship to supplement their present means and methods of transportation.

For some months we have been in communication with officers of various German manufacturing concerns with large experience in building rigid airships and, as the limitations of the Treaty of Versailles regarding the purchase by the Allies of German aerial equipment expired on July 10, it was deemed highly expedient to call this meeting today to consider, among other matters, an option we possess on certain rigid airships and equip-

ment which is about to expire, and regarding which, we are advised, competition has become so keen that an extension at the present terms will not be forthcoming.

I take great pleasure, also, in introducing to the board, Mr. Myron B. Waldo, president of the Mercer Trust Company, whose company has under consideration the underwriting of a bond issue for us.

The chairman presented then Brig. Gen. Arthur Boyd, chief engineer of the corporation, formerly in charge of Production and Maintenance of the Army Air Service abroad during the war, who submitted a report on the general conditions of the dirigible airship industry, important problems in starting operations in America, and the course to pursue if important contracts were to be made available to the corporation. The report made clear that, while there are at present no plants manufacturing rigid airships in this country, the industrial resources are available, if properly organized. Investigation, it set forth, shows that a fleet of seven ships could be built and put into commission in twelve months' time. For starting operations at once the general advised the purchase of one or two of the fast German rigids, one ship ready for delivery and a second promised in sixty days.



The United States is building at Lakehurst, N. J., this hangar for rigid dirigibles. It will have the largest clear roof area of any structure in the world. An idea of its size can be gained by a com-

parison of the Congressional Library that is set in the door. Its outside dimensions are: width 350 feet, length 954 feet, height 200 feet. It will house the two big rigid ships now being built for the Navy.

MR. WALDO: Why buy German rigid instead of British built ships as the Navy has done?

GEN. BOYD: Because the German airships are more advanced in type. The English ships are, in fact, modelled after the German war-dirigible L-49, and the English builders have never been able to duplicate, much less exceed, the performances of the original German ship. For half the British price we can buy from the Germans larger, speedier, more reliable craft, and a ship bought in England would not be available much before one we could build in the United States.

MR. WALDO: Quit generalities and give us something specific.

GEN. BOYD: I thought everybody in the world knew of the performances of the British rigid R-34 and L-59, but if it is necessary I will give the exact data.

MR. WALDO: I'm afraid I've been too busy to follow such matters.

GEN. BOYD: That's the trouble. The business men of this country have been "too busy" and for that reason it's necessary to go abroad for airships, even kicking at the gate of our late foe. And this, twenty years after such ships have been successfully operated abroad.

THE CHAIRMAN: Will Gen. Boyd give briefly a comparison of British and German achievements?

GEN. BOYD: England has built something over a dozen airships of the rigid type, while Germany has turned out over a hundred, each a distinct improvement on the preceding type. In November, 1917, the German war-dirigible L-59, left Jamboli, Bulgaria, loaded with supplies for the German troops in German East Africa. Passing over portions of three continents she had nearly reached her goal when a wireless directed her to return. She made Jamboli without stopping, covering a distance of over 3,950 nautical miles, the longest nonstop flight on record, and a distance about equal to that from Berlin to Chicago.

The Jaunt to Jamboli

THIS flight was made in ninety-six hours, at an average speed of more than 40 miles an hour, and on her arrival at Jamboli she had left in her tanks fuel for an additional flight of eighty hours, enough to carry her from Chicago to Seattle and return.

Compare with this the performance of the R-34, supposed to be the top achievement of the British builders. Two years later than the exploit of the L-59, the R-34 made a preliminary trip up the Baltic of about 2,500 miles, and then assayed the trans-atlantic flight. Going west she made 3,130 nautical miles in a little over 108 hours, or just over 29 miles an hour, and her fuel was so reduced that at one time it was doubtful if she would be able to reach New York without refueling. Going back to England she made 3,300 nauti-

cal miles in seventy-five hours, the wind being in her favor; something over 44 miles an hour eastward, an average for the round trip of about 36 miles an hour.

The R-34 was completely outclassed by the earlier ship. This comparison is not intended to discredit England, but she lacks the experience of the German builders.

General Boyd then concluded his report by saying that while the engineers of the "A. A. T." had developed a type of rigid design, based on Zeppelin engineering practice, which would be far in advance of anything in the world, it would be necessary to buy two airships without further delay to secure dividend-paying contracts at once. He and his staff of aeronautical engineers considered that the German ships under option satisfied all requirements.

Conrad B. Zeller, the treasurer of the "A. A. T.," said that

the price asked by the Germans was \$400,000 for the completed airship, delivered in Germany, and \$900,000 for the second ship, to be delivered in Germany in sixty days.

Present exchange rates would materially reduce these sums.

MR. WALDO: How big are the two ships and what could similar ships be bought for in England?

Lieut. Commander Eugene Wyatt, designing engineer for the corporation, formerly chief designer of airships for the Navy, gave the size of the completed German ship as 2,500,000 cubic feet and the one under construction as 3,350,000.

MR. ZELLER: A 3,000,000 cubic foot ship can be purchased in England, delivered at White City, London, in one year after signing contract, for £400,000 or, owing to rates of exchange, about \$1,650,000.

MR. WALDO: Do I understand that we are risking our own and other people's money on no more facts than that one rigid airship, under necessity of war, went down over Africa and another just barely crossed the Atlantic?

THE CHAIRMAN: By no means. The corporation has made the most exhaustive studies based on actual performances and on all available statistics.

MR. WALDO: Let's have the figures.

THE CHAIRMAN: Let me introduce Dr. Walter E. Wurtzbaugh, our acting chief of operations, who has recently retired from the National Aeronautical Board.

DR. WURTZBAUGH: Before giving the figures it may be well to call Mr. Waldo's attention to the fact that airship lines in Ger-

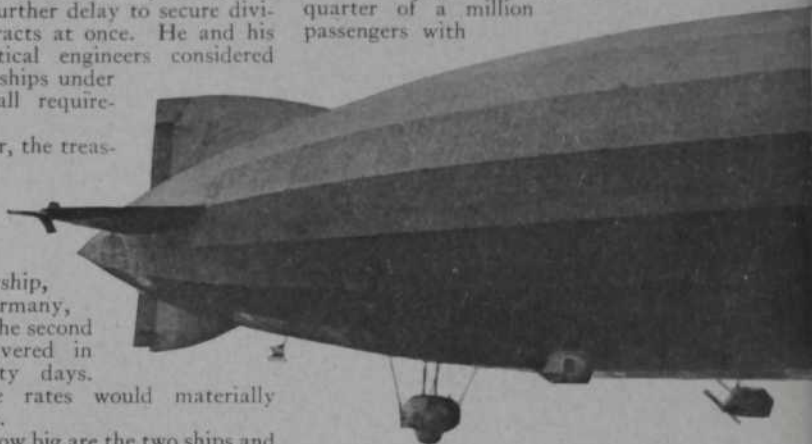
many have always been financially successful. Since the armistice the rigid airship *Bodensee* on a route between Friedrichshafen and Stockholm, via Berlin and other populous centers in Germany, has made express runs without interruption, and in the month of December, 1919, alone, carried nearly 13,000 passengers, besides tons of express and light freight. Since March of this year, the *Nordstern* a larger ship, has been placed on the same route. These two ships have carried something like 140,000 passengers without accident. Furthermore, the pre-war Zeppelins carried a quarter of a million passengers with

no loss of life and at great financial profit.

The passenger and express-carrying rigid in Europe have been ships of not over 3,500,000 cubic feet capacity; the ships of this corporation will be, with the exception of those under option, ships of 10,000,000 cubic feet capacity, capable of carrying a useful load of 200 tons at a rate of 100 miles an hour, and having a radius of 20,000 miles.

We have worked out the details of lines in this country which can be easily established and profitably maintained. The first route would be from New York to San Francisco via Cleveland, Detroit, Chicago, Omaha, and Salt Lake City; the second from New York to San Francisco via Washington, Dayton, Chicago, Minneapolis, Spokane, Seattle, and Portland. The third route would be from New York to San Francisco via Washington, Savannah, Jacksonville, New Orleans, Houston, San Antonio, El Paso, Yuma, San Diego, and Los Angeles.

Later routes would be from New York to Havana via Washington, Savannah, Jacksonville, Palm Beach and Miami; from New York to Rio de Janeiro via the above route to Havana thence to Colon, Lima, Valparaiso, and across to Buenos Aires and Montevideo; and a scenic route from San Francisco north to Oregon, thence eastward along the Snake



Airships of this type have been successfully operated for the last twenty years in Europe. Take the recent case of the one shown in this picture. The "*Bodensee*" in December, 1919, carried

13,000 passengers, besides tons of express and light freight. The pre-war Zeppelins carried a quarter of a million passengers without loss of life. The commercial ships have been very profitable.

River country to the headwaters of the Yellowstone, through the Park and then southward to the Great Salt Lake region, thence through Utah to the upper reaches of the Colorado, down the Canyon, then westward to pass over the Yosemite on the return to San Francisco. This route would cover the most extraordinary scenic section of the world.

We have determined that the cost of nine ships, including the two now under option

carried at the same time. Transcontinental express rates for first class matter are \$11.60 per hundred weight, while transcontinental freight rates are \$4.625 for each hundred pounds of first class freight; however, certain goods, easily handled by airship, take from one and one-half to four times the given rate.

Express matter is from five to ten days, and the fastest freight is from fifteen days to six weeks on the road, so we would, of course, have no competition with respect to time.

Our average charges would be, not considering excess charges for the element of time,

\$15.00 per hundred-weight; this

would give us additional annual income of \$22,570,000 gross; a total gross income of \$56,770,000.

We have placed our annual operating expenses at \$40,000,000, based on known costs abroad, but put into figures to meet our own industrial conditions; this gives us a net income of \$18,770,000, or nearly 19 per cent on the investment of \$100,000,000.

Mr. WALDO: The doctor's figures are very interesting and optimistic, but I want to know something about these ships you are going to use. How do you know they will do what you say? I have been given to understand that huge airplanes can carry big loads, cost small sums, and can travel much faster than airships. If all that is needed to start airplane lines is a few landing fields about the country, can't we do better to invest in the heavier-than-air game?

LIEUT. COMMANDER WYATT: I will answer Mr. Waldo's questions in inverse order. On the first point I am submitting a detailed engineering report. Briefly the situation is, that in heavier-than-air there is no automatic improvement in efficiency resulting from increased dimensions while in lighter-than-air the case is exactly opposite. The bigger you build your airship the more she will carry and the faster she will go, while the larger the airplane, the slower she will go and, beyond a certain point, the less she will carry.

These conditions are what governed us in our adoption of large rigid ships for our long-distance routes. In considering future expansion we must consider the operation of airplanes as the only legitimate means for quick service on short feeder runs, non-rigid dirigibles are too slow and have not the reliability of airplanes under adverse meteorological conditions.

In designing our airships we have been obliged to consider the dividend-paying factor before all other considerations; thus in a 3,000,000 cubic feet capacity ship, 736 feet long and 90 feet in diameter, we had a gross lift of 91 tons, a ship which would never compete financially with present transcontinental traffic at present rates; but by building a ship of 10,000,000 feet capacity, 1100 feet long, and 135 feet in diameter, we get a gross lift of 303 tons with a useful load of 200 tons and secure a ship with which no other system of transportation can possibly compete in certain services.

In this huge ship, we are able to replace the duralumin framework by steel, giving us a more rugged ship at a great saving in cost, and permitting us to "moor out" with greater safety no matter what the weather conditions

may be. This in itself is no small matter when it is considered that a shed for such a large ship costs about \$3,500,000. We have evolved many new and practical features which will place us in advance of all other nations. Briefly, our ship may be described as follows:

In appearance the "A. A. T." standard airship will resemble the *Bodensee*, although much larger; it will be fully "streamlined," attaining a speed of 100 miles an hour; the outer covering will be doped fabric, the streamlined cabins will be of aluminum on steel frames.

The engines will be inside the envelope where they can be readily overhauled under way, and will be improved and specialized Diesel crude-oil burning types, the power being transmitted to the propellers by oil pressure through tube-like cylinders operating against the propeller shaft with spur connections similar to the method used in synchronizing machine guns mounted on airplanes and firing through the propellers. The great value of this type of drive will be readily understood when it is considered that the old type of airship is fitted with engines really developed for use in airplanes which are not efficient after about 125 hours running, putting the ship out of commission for a period of about 24 hours after five days of continual service.

Eliminating Fire Risks

DIRECT-connected generators will furnish the electric power for lighting, elevator service, radio apparatus, and operating pumps and other small machine equipment.

Gasoline, the real fire hazard of rigid ships, will thus be done away with. So, too, will the highly inflammable hydrogen gas, for we will use helium. The helium will be in duralumin chambers doing away with gold beater's skin and fabric balloonlets in use in the old type rigid. This item is one of great economy, for the balloonlets deteriorate fast and must be replaced every two years in commercial airships. The epoch-making feature in connection with the helium is the method of compressing the gas by pumping from the gas chambers into high-pressure tanks when coming down on a field or after landing, which destroys the ship's buoyancy and makes her a heavier-than-air ship for the time. This does away with 75 per cent of the usual handling crews and also reduces the cost of maintaining intermediate landing fields. Mooring masts will be needed at the express transfer points only, while hangars will be a necessity only at terminals and repair stations.

Another unusual feature of our standard design is the collapsible landing deck on top of the airship for use of the feeder planes bringing passengers and express from cities and towns along the route. Notified by wireless, the plane with the passengers takes the air and lands on our deck at the hour specified and the transfer is made without stopping our airship. This same scheme will be used in covering mail zones without loss of time.

The passenger accommodations are superb in our big airships; all comforts make a train on the surface with its dusty, stuffy, hot cars seem primitive. Engine exhaust is used for heating purposes.

Mr. WALDO: How can a man my age live at an altitude of 30,000 feet, to which this ship might go? The altitudes of the overland trains in the mountains nearly kill me as it is.

Mr. WYATT: Such contingencies have been provided for by installing compressed air and oxygen tanks. The cabins will be closed by airtight doors and the air-pressure and oxygen supply regulated automatically by

which will be assigned to the last named routes when new construction permits, and the hangars, sheds, fields, terminals, mooring stations, work shops, and quarters necessary to maintain and operate the above lines would cost in round figures \$78,000,000; add to this the sum of \$22,000,000 for a working capital and our total need is \$100,000,000 for the enterprise.

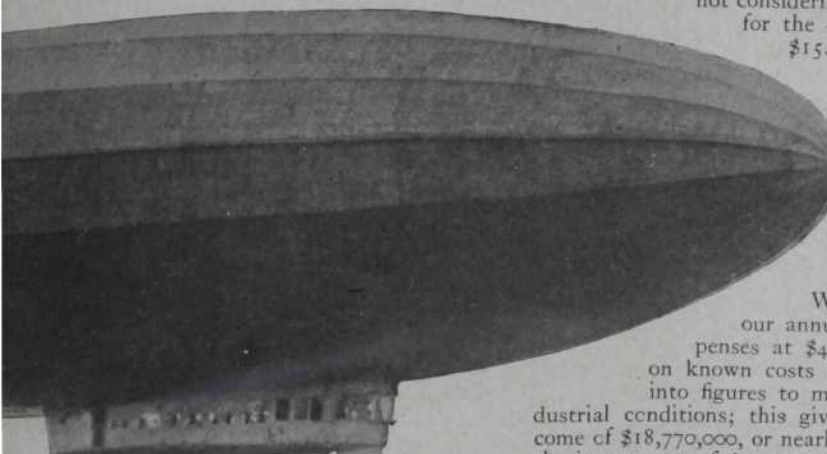
Mr. WALDO: That's something to work on. But can it be made to pay?

Dr. WURTZBAUGH: It can; our chief asset will be time. A man hurriedly called from New York to San Francisco boards the Lake Shore Limited leaving New York at 5.30 p. m. on Saturday, arrives at Chicago at 4.00 p. m. on Sunday and leaves at 7.10 p. m. the same day, arriving at San Francisco at 5.10 p. m. the following Wednesday, a matter of four day's en route. The total cost for the trip amounts to from \$150.00 to \$225.00. We can take the same man on board one of our airships Route One, New York-San Francisco Express, leaving at the same time on Saturday and land the man at San Francisco at 6.00 a. m. on Monday, saving three whole business days.

They'll Pay for Speed

WE should of course charge for speed but leaving this out of consideration let us figure on direct competition with the railroads.

At three and one-third cents a mile we charge the passenger \$115.00 including the Federal Tax; add to this stateroom accommodations and the cost of four meals, and the total charges will be about \$135.00 for the trip. On this basis, carrying 200 passengers on each trip each way, the annual gross passenger revenue would be \$4,750,000 for each ship in service. Allowing for one ship being out of commission constantly, our eight remaining ships at two-thirds capacity on all routes, with varying rates of passenger-mile income, would bring in a gross annual income for passenger service alone of over \$36,200,000. To this income there would be added the further income of mail, express, and light freight carrying, varying from 25 to 150 tons per trip according to the number of passengers



pressure valves operating as the ship gains altitude. A system of propulsion by "electric drive," so popular in surface ships and naval vessels, had been worked out by the "A. A. T." engineers, which, when further perfected, may furnish a still more economical method than the oil-impact-Diesel system.

MR. WALDO: Where can the "A. A. T." expect to find sufficient trained personnel to handle the ships, and also where will the ground mechanics come from?

DR. WURTZBAUGH: There are sufficient highly trained airship pilots and crews on the inactive list of our Naval Reserve Flying Corps to man a fleet of fifty rigids. Some of the pilots served overseas in the Royal Navy Airship Section and were over the North Sea days at a time under the most trying weather conditions, and have even been in command of British Airship Stations.

MR. WALDO: Where do we get helium for nine ships? I understand that the government has already spent more than \$7,000,000 and has only got 147,000 cubic feet.

THE CHAIRMAN: That can best be answered by our superintendent of construction, Mr. Kenneth Young, formerly a commander in the Navy, who has been negotiating with the Navy Department.

MR. YOUNG: Mr. Waldo's informant told the truth, but not the whole truth. The \$7,000,000 includes all the initial costs of promoting an entirely new industry. The pioneer work has been done, and where before the war helium cost about \$1,700 a cubic foot, the government plant in Texas has produced a 92 per cent pure article at a cost of \$390 per 1,000 cubic feet. It is estimated that quantity production will lower the price to about \$50 per 1,000 cubic feet. Because of certain structural features in our standard ships being

made to accommodate the installation of ordnance equipment, such as guns and torpedoes, and also because we have agreed to make our fleet available as naval auxiliary aircraft in time of national emergency, we have been assured by the Navy Department that we can have sufficient helium to fill our ships. It appears certain that we will be obliged to use helium from the government plant for at least four ships; after that the National Helium Company will be able to supply us with gas. The price agreed upon with the Navy is \$50 per 1,000 cubic feet, and we have a contract with the above named company for all the helium we shall need for the first eighteen months, beyond that secured from the Navy, at the same price.

The National Helium Company now controls about 60 per cent of the domestic supply of helium and is building a large plant in Oklahoma where the daily output of gas will be about 2,500,000 cubic feet. Should we be obliged to store helium in any large quantity at our various terminals we would run into heavy costs. To escape this it is proposed to build our erecting shops near the National Helium Company's plant and connect by pipe line to the reduction apparatus.

MR. WALDO: Admitting that the helium question can be met, how far are we tied up by this naval auxiliary project?

GEN. BOYD: While the United States signed the International Aircraft Rules and Regulations formulated at Paris, no legislation has been passed by Congress applying the regulations to commercial aviation within its own boundaries. Nevertheless, the "A. A. T." has come to an understanding with the Army and Navy and Post Office Departments whereby, in consideration of incorporating features of design in our standard airship which makes

them available for service in war, as in the case of the merchant marine, and providing in our hangars accommodations for army and navy dirigibles forced to seek repair facilities, the various departments mentioned will extend engineering and experimental aid to the corporation.

COMMANDER YOUNG: The plans for building terminals include a three-ship hangar at New York, Chicago, and San Francisco; single ship hangars at Cleveland, Omaha, El Paso, Miami, and Seattle; and mooring stations at the other cities named on our routes. Hangars will be built with a turn-table in order that high-wind conditions shall not delay operations. The costs of these projects have been included in the estimate of \$78,000,000 as stated by Dr. Wurtzbaugh.

MR. ZELLER: The Board will be interested to know that we have received above 7,500 applications for reservations on the first trip across the continent. Contracts are pending with the Post Office Department, with two national express companies, and with numerous heavier-than-air companies wishing to serve as feeder lines to the "A. A. T." Purchase of the two German rigids will allow us to take advantage of these important contracts, giving us a preferred position at the start, and permitting us to perfect our operating organization while we are building our standard ships and our stations. Landing stations are available on the Number One Route and need only the installation of mooring masts to make them serve our purpose.

MR. WALDO: I am inclined to believe in the commercial possibilities of your project, am prepared to accept membership in your board, and to recommend to my company that it assist in your financing.

The meeting then adjourned subject to the call of the chairman.

The Destiny of Our Deserts

Do you think our dazzling western wastes are useless? Here's the story of how they helped save a cotton crop and of an ancient promise that yet will be fulfilled

By ALEXANDER T. VOGELSANG

Assistant Secretary of the Interior

THE OUTLOOK for Calcutta jute butts was bad indeed in 1915 and 1916 when the U-boat was in flower, and it grew worse day by day. These butts were imported into the United States to make the bagging for cotton, and many thousands of tons were thus utilized each year.

The American Manufacturing Company works in jute, sisal and hemp, and has great plants at Brooklyn, St. Louis and Charleston, out of which it turns a large percentage of our annual bagging product.

This company has also a gray-eyed and gray-haired treasurer, shrewd and wise, in Benjamin Gratz. The war put Calcutta bottoms at the bottom of the seas, or else in other more essential war traffic. There could be no bagging unless we could find an ersatz. So Benjamin Gratz got busy and studied the men who had studied botany and knew fibers. They gave him a list of all fiber-producing plants that might be found or grown nearer home. Upon examination he found none of them practical.

Then someone suggested yucca and he wired El Paso to send him a sample plant, which came green and seemed as useless as the others.

He put it aside in his office and gave more intensive cultivation to his gloom.

Some weeks later, while gazing out of his office window and figuring upon how long the shutdown of the works might be postponed, he picked up a dried leaf of the discarded plant and aimlessly worked it between his fingers. He then noticed that the filler of the leaf fell away at the working point leaving an inch or two of exposed fiber. Then he took a paper-weight and pounded the leaf its full length, examined it carefully, and said "Eureka!"

Thereupon he sent for a carload of the stuff, which was shipped green, was long delayed en route, was cooked, rotten and worthless on delivery. He then ordered the shippers to cut, dry and bale it, and, after many trials and the expenditure of \$80,000, he finally had it where he wanted it and prepared a budget to put up digesting works at East St. Louis to cost half a million dollars, thus to save the cotton crop from heavy loss.

Meantime there was drought on the cattle ranges of the desert and the growers kicked at the yucca harvest which they said cut off the only cattle food remaining. True it was poor, innutritious, and the last resort

of a starving beef critter. They did not know why it was being taken from the ranges, nor to what use it was being put, but they wanted the cutting stopped, and they prayed that the Government intervene in their behalf. And here is where the Department of the Interior came in. One day the writer found on his desk an order for approval prohibiting upon the prayer of the stockmen any further cutting of this plant on public lands. The proposed order excited a mild executive curiosity as to what had made this hitherto waste and worthless plant the subject of controversy, and no answer was forthcoming.

All that the office knew was that the stuff went to St. Louis, but its use there was a mystery that was only solved by tracing it to its source. Then we discovered that the American Manufacturing Company was engaged in experiments with the fiber content of the plant, and we deferred action pending determination of the economic balance between its fodder and its fiber use. It was soon shown that the lack of foreign fiber, due to the lack of ships, made the use of a domestic substitute imperative in order to save the cot-

ton crop. The cattlemen were overruled, and permission to take the plant from public lands was granted.

The result is that in East St. Louis the American Manufacturing Company is operating a fiber-digesting plant today which cost \$900,000, is producing 1,000,000 pounds of fiber per week, and has turned out more than 120,000,000 pounds of fiber or about 60,000,000 yards of bagging, and has baled one-third of the cotton crop of this country each year for the past three years. So good and so fair is the substitute that most of its users do not to this day know that such substitution has been made.

The plants now are cut, dried and baled for shipment to St. Louis. One-half of the plant is waste, and the freight rate from field to factory is .515 per hundred pounds.

Ocean freights since the armistice are still high and prohibitive, though as time passes they may be expected to fall.

This company has secured control of large private holdings, and will probably produce the fiber while green where grown and thus cut down transportation charges and secure a better product possibly usable for other purposes than cotton bagging.

Turn from the other side of the picture to the Department of Agriculture's reports and see why the stockman objected to Mr. Gratz descending upon the desert. The cattle raiser doesn't call it *Yucca elata*, he calls it soapweed, and he knows that in times of drought it is a life saver for his herds. Its sharp pointed leaves discourage even a desert raised steer if there is anything else handy, but cattle learn to chew them from the base toward the sharp end, and that problem is solved when necessity drives. The flower stalks and blossoms that come in May and June are eaten, and cattle with a supply of soapweed go several days without water so juicy are they.

Now the paternal department is teaching the ranger how to make the best use of soapweed and what to feed with it.

All this has to do only with *yucca elata* or *palmilla*, one of the half-dozen varieties found in the arid regions of our great southwest.

In the deserts of California, southern Nevada, and western Arizona are found *yucca mohavensis* and *yucca baccata*, which are the subject of extensive experimentation and manufacture by the Desert Products Company, of Los Angeles, which is producing a high-class substitute for Yucatan sisal and finds a ready market for its product with the International Harvester Company, which purchases it in carloads lots for binder twine. The company is willing to purchase 10,000 tons of this fiber.

The Desert Products Company has asked the

Department for exclusive rights to gather the plants from extensive desert areas so as to justify the expansion of its business, and also for the privilege of using smaller areas for propagation experiments. Both requests seem reasonable but require congressional sanction.

The Union Fibre Company, of Tucson, Arizona, is engaged in the production of fiber from *yucca macrocarpa*, collected from the arid lands in that vicinity and other concerns are prospecting this resource in other desert locations.

And *yucca*, in turn, is but one of the desert flora which grow without irrigation and whose possibilities as wealth producers are just beginning to be known.

A Native Substitute for Rubber

THE mesquite and the cactus are inviting the attention of the new business scientists. The former is a shrub, or tree, bearing bean-like pods which form a most important stock food. Its wood furnishes the desert resident with his fenceposts and his fuel, and is a heaven-sent blessing to these apparently god-forsaken regions.

The cactus, in its many forms, has a food value, and some classes have the virtue of water accumulation in limited amount, which has saved the lives of many thirsty travelers. The abundant ocatilla cactus is at this time the object of much experimentation in the hope of producing in commercial quantities a rubber substitute.

An extensive plant is in operation at Salome, Arizona, where this form grows abundantly. Its product has been used with success in place of rubber for automobile tires, waterproofing, and other purposes. Whether it shall prosper and form a permanent desert industry would seem to depend upon its ability to live in competition with tropical rubber.

Isaiah was the greatest of the prophets and his vision may have gone far beyond the limits of irrigation when he promised:

I will make rivers in the desert, and the desert shall rejoice and blossom as the rose—

He will make her desert like the garden of the Lord; joy and gladness shall be found therein, thanksgiving and the voice of melody.

The reclaimed lands are but a fragment of the desert and it is in the vastly greater areas, still scorched and still athirst, that man is finding a verification of the prophecy.



Promoting the Effortless Shave

Despite what the advertising expert calls "the fundamental conscious need and subconscious demand for the efficiency offered," men still use old-fashioned razors and cakes of soap

By FRED C. KELLY

AS THE READER of perspicacity may have noted from the title, this little piece is going to touch on the subject of shaving soaps. But we are going to discuss shaving and soap chiefly because they furnish a handy means for prying into a phase of advertising.

In the face of clever advertising, men—and women—are like children. We do what we are told. That is, a substantial number of us do. Advertisements are designed to overcome our natural inertia and disposition to do the things we have always been doing and bring us around to doing something else. An advertisement is good in proportion to the number of persons it can make obey what it says.

It hasn't been so very many years since the only persons who shaved themselves were intrepid souls born with the spirit of true adventurers. Ordinary folk had a disrelish for learning to drive an old-fashioned razor—which was the only kind of razor the markets provided—and went resignedly to the barber shop.

On Saturday night there was such a rush at all popular barber shops that customers got numbered tickets designating their order on the waiting list, and everybody hated the man who got his hair cut while others waited impatiently merely to be shaved. Many of our leading citizens sought prestige by having their own personal shaving mugs, and a rack full of these mugs at a barber shop comprised an unique study in the art of the period.

The Symbolic Shaving Mug

A PICTURE of a locomotive on a mug indicated that the owner was a railroad yardmaster, or perhaps even an engineer. Clarence Frazer, our leading blacksmith, had a lovely golden anvil and hammer on his mug, with his initials in fancy letters just above. Various other studies in still life were to be seen. And, oh, how pretty some of them were! Thaddeus Zell, who had once worked on the Ohio & Erie Canal, had a perfectly beautiful purple mug with two anchors and a compass that was the envy of all who got shaved in Rufe Mullen's shop. About one man out of three had a lodge emblem on his mug. It was nip and tuck between the Odd Fellows and K. of P's.

Going to the barber shop was one of our few opportunities for meeting one's fellow-townsmen in a social way on a basis of comparative equality. The humblest citizen might find himself in a chair next to that occupied by a leading banker. Of course, only a few of our citizens got shaved every day. That would have meant too much expense for small gain. So long as one's catch of whiskers was only two or three days old, it was generally felt that no harm was done. Even at that, having in mind what an enemy whiskers are to romance—particularly short, bristly, untrellised whiskers—I often wonder that, in the days before safety razors gained popularity, divorces were not sought more frequently.

Well, anyhow, getting shaved at the barber

THIS IS a bit of light and entertaining reading made to suit the summer season. As is often the case with humor, that of Mr. Kelly has a strong admixture of philosophy.

Behind this easy story of the war of the shaving soaps appears the work of two great commercial laboratories. One of them is the scientific that, through endless experiment and combination, seeks to improve the product; the other is the human nature laboratory that tries to force us from ancient usages and make us want the improvement.

And it is not as easy as you might imagine. Mr. Kelly points out that more shaving soap fashioned in round flat cakes to fit in shaving mugs is sold than any other kind. Have they changed your shaving habits?—THE EDITOR.

shop was a fixed institution, and it was no childish task to convert great masses of people to exasperating their beards at home with a safety razor. Manufacturers of safety razors had to overcome several thousand years of habit—for there had been little radical change in shaving methods since the bronze age. The first man who ever drove an automobile into Central Park was arrested. People were violently opposed to automobiles, until they became accustomed to them, because of their novelty. Likewise they did not jump spontaneously to a new plan of attack on whiskers.

In only one way could men be gradually brought around to the idea that their facial bristles might be removed quietly and effectively right on their own premises. That one way was by advertising. It took millions, I imagine, to induce men to use safety razors to the extent that is done today.

And the surprising thing now is not how many men use safety razors, but how many still do not. Thousands of men who admit the advantage of shaving at home think that one is a mollycoddle to lay aside an old-fashioned razor in favor of a safety.

I do not pretend to know the exact figures or proportions, but I am assured by those who appear to have the facts that there are still more men who either shave with old-fashioned razors, or in barber shops, than with safety razors.

If everybody who now shaves took up the safety idea, all the razor factories in the country could not supply the demand. In other words, advertising can go just so far. You can advertise an idea and sell it, but the main crowd that you interest is made up of persons who are reasonably susceptible to new ideas. The others are so conservative that scarcely anything will change them. They are well-nigh immune to ordinary advertising propaganda.

Now, after the shave-self proposition had

taken hold and everybody—more or less—was doing it, the manufacturers of shaving soap began to advertise on a widespread scale, each one calling attention to the fact that perhaps his soap would answer one's purpose about as well as any other. And right here it may be remarked that manufacturers or salesmen of rival products are obliged to watch one another's goods just as a managing editor must study each edition of an opposition newspaper. One must study from day to day not only the quality of goods offered by a competitor, but also the quality of the advertisements about the goods. Just as the managing editor notes the headlines in the other papers—in other words, the manner in which the rival commodity is displayed—the manufacturer pays close heed to the method of a competitor to gain interest in his own particular product.

The battle of the various brands of shaving soaps furnishes an excellent example of the way selling organizations must strive for even a slight advantage. A seemingly inconsequential talking point for an article is often of vast importance, particularly when there is a sustained advertising campaign back of it.

At first, about the only kind of shaving soap to be had was a round cake about the size of an old-fashioned silver watch—designed to fit into the bottom of a mug. The different brands were practically the same in quality and price. This left the indifferent buyer without any motive for selecting one brand over another, and he was likely, therefore, simply to ask for the one that he had seen mentioned most frequently or most conspicuously in advertisements. Consequently, rival manufacturers strived to outdo one another in the size and vehemence of their statements to the public that they were, frankly, in the shaving soap business and desired to sell their wares.

An Expensive Circle

THE great trouble with this was its expense. If one man takes a half page in several magazines and his rival tries to outdo him by taking a full page, there is nothing for the first advertiser to do but take more full pages and take them oftener. This sort of competition, if carried on, would have a tendency, eventually, to run into money.

So one manufacturer had a clever idea. He determined that he would have no more advertisements about his soap than anybody else, but he would say something about his soap that the others couldn't say—because his would be different. Instead of having a flat cake to fit into the bottom of a mug, he would make it possible to relegate the shaving mug permanently into the discard.

His soap would be in a stick! And it could be applied to the face direct.

The introduction of the shaving stick really marked a definite advance of shock troops in the anti-whisker movement. If my memory is correct, the first shaving stick came in a round pasteboard box. Another manufacturer, noting that the stick promised to enjoy big popularity, decided to go his competitor one better and put on a-shaving stick

in a dandy little box of *tin*. In a short time every manufacturer had a tin box, and thus it became necessary to get hold of another exclusive talking point. Somebody looked over the situation, examined each shaving stick and each box on the market and—"Eureka!" said he. What do you suppose he decided to improve? Not the soap itself, or the tin box, but the tin-foil wrapper around the soap. Up until then the tin foil had been just plain tin-foil. But the thing this man had thought up was to have the tin foil perforated—so that a little strip of it could be easily removed without tearing the rest every time another three-quarters of an inch or so of the soap stick had been used up. A trivial detail, you say. True enough, but it meant the sales of thousands upon thousands of shaving sticks by one manufacturer. Those little inexpensive perforations in the tin-foil wrapper are said to have been worth a starting sum of money.

But the end was not yet. Do you suppose other manufacturers were going to be submissive second-raters just because a rival had made a few holes in tin foil? The next development was a tin box—thoroughly advertised, in due course—with a movable bottom that could be shoved upward as the soap was used, so that the soap needn't be taken out of the box at all.

Well, finally things got to a point where the shaving stick and box could no longer be much improved. So what were the manufacturers to say in their advertisements? There was no use just announcing: We have practically the same thing as others—so buy our brand.

There had to be another radical step forward. And there was. It was this: Shaving powder. That gave the advertisement writer a big opportunity.

Evolution and the Powder

LIKE the shaving stick, the powder went through several evolutionary steps. First the powder and then better tin boxes. One tin box had a hinged lid. Sometimes this came open and the powder spilled all over things. This didn't really do much harm, but it led to improving the lid of the box—not so much as an aid to the consumer as to furnish a text for the advertisement writers. And so we were confronted with magazine pages that set forth the merits of shaving powder put up in a tin box with a top that wouldn't come off.

Does a man about to buy shaving powder cautiously consider the kind of lid on the tin box? No. But when the clerk asks him which kind he desires, he has to answer something, doesn't he? If quality and price are equal and he is nevertheless obliged to make a choice, he is quite likely to think of the powder that has been represented to him in the advertisements as having the most efficient little tin box.

Once again things were practically at a standstill, that is, there was nothing more that the manufacturers could do either to the shaving powder or the containers. What

then? Shaving cream! What a glorious day it must have been in the offices of the advertising agencies when at last they knew that there was to be shaving cream. One could put it on the face just like buttering bread.

As soon as all the competitors in the field had shaving creams, in little tubes, with screw tops, it became necessary to lay stress on the chemical contents of the paste, each advertiser insisting that



The barber shop rack with its ornate rows of individual shaving mugs still holds its own against that upstart, the shaving stick.

his product would soften the whiskers quicker than any other brand.

There were pictures of men shaving, first with ordinary shaving cream and then with *our* kind. The delighted, happy expression on their faces while using the kind the advertisement was about indicated that, so far as shaving was concerned, they had at last found the holy grail. Later on the tendency was toward greater frankness. Most shaving soap advertisers are today willing to admit that shaving is not a luxury or a delight at all, but a reprehensible, time-wasting necessity, and that the best one can hope for is to obtain a shaving cream that will cut the annoyance to the minimum.

Still, however, the advertiser groped for something simple and effective in the way of direct appeal to the buyer's imagination. Ah-h! What have we here? The little cap on the end of the tube containing the cream. Surely something might be done about that. One genius investigated how many of these little caps are accidentally dropped into wash-bowls and down the drain pipe. The next day his firm arranged to have a cap on their shaving cream tubes so large that it couldn't go through a drain pipe opening. And advertisements were prepared directing people to ask for the tube with the big cap. You might be surprised at the number who did exactly as the advertisement told them and invariably picked out a tube with a cap larger than the others.

But, big cap or little cap, there was still a difficulty. People forgot to put the cad

back on. Then when the shaving cream dried up, the manufacturers got the blame. There is one sex in particular that has long been careless about replacing the cap on tooth paste, and now this same sex has taken to the use of shaving cream as a facial soap. And—hey there, mister! Does *your* wife ever put a cap back on a tube?—thus it came about that there was a big demand for a cap that could not be lost from a tube of shaving cream, but would still be attached by means of a little wire hinge. An inventor got up just such a device. It is safe to say that there will be others—probably better ones, or maybe a new-fangled kind of tube, a prettier color scheme on the tube, or something for the advertisements to tell us about.

So it goes. But here is the strangest thing of all: After the gradual development of shaving sticks, shaving powder and shaving cream, and the extensive advertising of them, what form of shaving soap do you suppose is the most extensively sold?

Answer: The old - fashioned cake made to operate from the bottom of a mug. You

see, advertising campaigns, no matter how effective, can't do everything. The public can be pushed just so far. And the greatest obstacle to converting the entire public to a new idea is the tremendous resisting power of habit.

Shaving soap in a cake was the kind first used and it is still the cheapest. Even aside from the barber-shops, thousands of men are satisfied with it, because, having tried it and found it effective, they see no need for changing. The average person, I repeat, is a conservative. Then,

too, when a man gets into the habit of paying ten cents for his shaving soap, he dislikes having to pay any more for soap in some other form. It isn't necessarily that he can't afford more, but simply because he has definitely associated his shaving soap and ten cents together. Even if the price is raised to more than ten cents, he is still prejudiced in favor of the article that he has long known to be the cheapest.

Whether selling shaving soap or threshing machines, the advertising about the article must overcome the natural prejudice in favor of *not* buying it.

The "Iron Age" is Right

THE *Survey*, in its issue of June 19, discussing the bill for the creation of a department of public works, says, and says wrongly: "The Chamber of Commerce of the United States, practically all the national engineering societies and other bodies are taking the stand that the present distribution of public works activities over many departments results in waste of public funds; that only a coordination of these activities in a single department can ensure efficiency."

What is true is found in this extract from *The Iron Age*:

"The proposal to create a government department of public works failed to receive approval in a referendum among the membership of the Chamber of Commerce of the United States."

The World of Business Affairs

Two Centuries of Corporate Life

CORPORATIONS, though perpetual in legal fiction, may acquire something akin to venerable hoariness. The Hudson Bay Company is a case in point. In May it passed its two hundred fifteenth birthday, and yet it is not only virile enough to conduct a great merchandising business but as agent for France during the war it carried 13,000,000 tons of food to the European continent and lost 110 steamers valued with their cargo at \$125,000,000. Clearly, the corporate form may unite real strength to longevity.

The corporate form in the days when the Hudson Bay Company came into existence—the Governor and Adventurers of England Trading into Hudson's Bay, according to the full title—was conferred by royal charter, and this particular charter delights the eye as well as arouses the imagination. On display in the company's offices in London, it is a wonderful demonstration of the decorative penmanship of which earlier centuries were capable.

Penmanship was not by any means the object. Furs were the attraction. Two hardy Frenchmen had ventured far beyond the French settlements in Canada and returned to tidewater with many bales of rich pelts. Their immediate reward was heavy fines from their brethren because they had not first obtained licenses. Thereupon they sought London, obtained British capital, struck the heart of the fur country through Hudson's Bay, and started the adventure.

Ever since the two Frenchmen "broke bounds" and discovered new fur country, the Anglo-Saxon has felt an impelling instinct for "going in" to the north country.

Goldfish, an Interstate Problem

GOLDFISH have run afoul of the new express rates. Quantities of them originate in ponds along the eastern edge of the mountains in Maryland, and find their way over a good part of the country, via express.

Not being like Topsy, the gold fish of commerce do not simply grow; for their development they require managerial ability. The managerial ability asserts that an increase of \$20 a thousand gold fish, in express rates, will close most of the country's markets to the varieties which can find their way to the humblest homes, and accordingly a delegation of managers has placed the predicament of the goldfish industry before the Interstate Commerce Commission.

Defining Unfair Competition

UNFAIR COMPETITION is a question ultimately for the courts and not exclusively for the Federal Trade Commission, according to an opinion handed down in June by the United States Supreme Court. The words in the law of 1914, "unfair methods of competition," the court says are "clearly inapplicable to practices never before regarded as opposed to good morals because characterized by deception, bad faith, fraud or oppression, or as against public policy because of their dangerous tendency unduly to hinder competition or create monopoly. The act was certainly not intended to fetter free and fair competition as commonly understood and practiced by honorable opponents in trade."

Accordingly, the court held that the commission had exceeded its powers in saying it was an unfair method of competition for a merchant to refuse to sell steel bands for cotton bales unless the buyer also purchased from him bagging to cover the bales. If the commission had found that this practice was not an exercise of the merchant's reasonable discretion, was not pursued in good faith, and had in reality a purpose to obtain a monopoly the court indicates the case would be different. As things stood in the case, however, the court said, "If real competition is

to continue, the right of the individual to exercise reasonable discretion in respect of his own business methods must be preserved."

All for the Lack of a Hickory Handle

MOST OF US recall what happened "all for the want of a horse-shoe nail." Perhaps that's the trouble with American industry if production is as low and the outlook as bad as some prophets of evil would have us believe. There's a lack of hickory for axe handles. The chain of events is inevitable—no hickory, no handle; no handle, no axe; no axe, no lumber; no lumber, no box cars; no box cars, no transportation. Or if you prefer you can follow the missing axe handle into any other line of production.

Moral Obligations and Liberty Bonds

IN justice to the 21,000,000 individual subscribers and the banking and fiduciary institutions which hold its obligations at a loss, the Federal Government is morally bound to employ the most effective means to restore and maintain the price of the various issues of Liberty Bonds and Victory notes at par. It is a leading question in this connection whether the Treasury is pursuing a wise course in handling sinking fund operations and in the manner in which it is making market purchase of Liberty Bonds. There are those who contend that the treasury in making its purchases through brokers actually assists in depressing their market value.

Treasury officials have recently rejected suggestions that sinking fund operations should be carried on publicly instead of secretly as at present and that the Government advertise for tenders of the public issue at frequent intervals. The objection is made that such change of procedure would leave the market unprotected during intervening periods of such redemption; that publicity would introduce the psychology of selling rather than holding bonds and that it would tend to create bank expansion.

On the other hand, it is maintained that the Treasury reserve 25 per cent of its contemplated \$1,000,000,000 annual purchase of Liberty Bonds for emergency use and that publicity, such as effectively used in connection with operation of the sinking fund to redeem Civil War bonds, would create a psychology of "buying up" and holding Liberty Bonds. It is furthermore maintained that brokers be eliminated and that the Government should deal directly with the public in the redemption of the bonds, as it dealt with the public in selling bonds.

From the time of Alexander Hamilton prompt extinction of public debt has been the government policy. If Liberty Bonds should sell on a basis of 4¼ instead of 5 per cent the railroads would be enabled to float their bonds at a relatively lower rate. The same is true of capital and credit demand of all corporate enterprises.

Why Charlie Chaplin Left England?

PSYCHOLOGICAL NUANCES are lacking in American moving-picture films, according to a British contemporary, which records that 85 per cent of the films shown in London in a week of May were made in the United States.

Showmanship is the thing in which our British friend says our films easily excel, with an apparent reference to Barnum as an American institution for which British taste could not as yet be expected to be prepared. Psychological nuances, on the other hand, do not seem to be demanded of us.

England and the United States have had irreconcilable differences in such matters as humor and jam. Psychological nuances may now be added, by way of the movie film, to the list of divergencies in taste over which international repartee rages with amiable fervor.

Between the Sea and Land

Men who protect lives and commerce along our coast must hunt smugglers, stalk icebergs and in other ways live more adventure than our most prolific novelist could invent

By AARON HARDY ULM

ATHICK and mysterious night. The only sound is the wash of waves on beaches that have felt the bare feet of pirates.

From a height inshore a sudden light swings three times in short arcs. In the days of Black Beard it would have been a horn lantern—now it is a high-powered flash light manufactured in Philadelphia. In the darkness offshore there is an immediate answer. In other times it would have been the creak of a pulley or the flap of a sail; now it is the cautious put-put-put of a motor boat.

Smugglers!

Not your dude smugglers who dress for dinner and hide unset diamonds in the hollowed heels of pumps. These are the sort that smell of tar—and rum. They are the unadulterated article. Modern prototypes of the picturesque outlaws that add thrills to such books as Stevenson's "Master of Ballantrae."

The vessel noses her way cautiously up the inlet toward the cove marked by the three tall palms. The crew speak in whispers.

Suddenly a blinding light cuts darkness and after a moment's groping picks up the prowler and holds her in a relentless circle. A swift gray shape approaches. The captain of the smugglers throws up his hands and relieves himself with a volley of deep-sea oaths that would strain the bulkheads of any language but Spanish. Apparently this helps a lot.

"A revenue cutter," he says to the crew, and shrugs his shoulders in resignation.

And what is the cargo that demands such stealth to land? Booze, men, booze!

Smuggling with all its romance and mystery, is with us again. It was brought back to life by a national prohibition. Scenes that used to give occasional glamor to remote points of the coast are now being reenacted on the beaches and bays of Florida, and occasionally elsewhere on our sea front.

And, for the first time in a century, the Revenue Cutter Service, now embodied in the United States Coast Guard, is being called on to perform the chief duty for which it was created by the first U. S. Congress in 1790. Until lately the very existence of the revenue cutter service, aided by changed conditions, rendered smuggling in bulk, once a common evil, a virtually extinguished practice.

National prohibition and prospective rewards, typified by "twenty-a-quart" quotations, have brought about attempts to revive it.

Two recent cases are illustrative; they have to do with the *Ysabel* and the *Reemplazo*, both Cuban smacks caught off the coast of Florida with cargoes as wet as their keels.

The *Ysabel* had \$4,000 worth, chiefly cognac, of which there were 1,093 quarts, and the *Reemplazo* had \$500 worth of various expatriated delights. The first was taken in the vicinity of San Carlos Bay and the second off Indian Rock Beach, near Tarpon Springs. Both were in command of and manned largely by Cubans, though there were seventeen Chinese aboard the *Reemplazo*. The skipper of this craft bore the romantic name of Magit Estavez Infanta.

The fact that attempts at whiskey smuggling are more common on the coast of Florida than elsewhere isn't due to excess of thirst in that quarter but to natural and geographic advantages. Only fifty miles away is the British island Bimini and not far away are the other Bahamas, and to the south lies Havana within a safe night's run. Furthermore, the coast is flat and serried with tortuous inlets that offer refuge to small craft.

Hence the keeping of liquor out of Florida is recognized as quite a job, in the performance of which the coast guard is operating an extensive patrol with small craft, in the main

Sound area and a few other districts adjacent foreign territory that is still without the great desert.

But keeping tab on whiskey smugglers is only one of the numerous romantic and adventurous tasks encountered daily by the historic coast guard. Of all branches of the government, there is no other which performs duties one-half so varied or that affords the performers one-tenth of the thrills.

It Got an Early Start

THE coast guard is the oldest militaristic branch of our government; as the revenue cutter service, it came into existence almost concurrently with the nation, before we had either navy or standing army.

In a hundred different ways this national service touches and ministers to the country's commerce. Its effect upon the price of everyday commodities is felt, but is rarely noticed. Its everyday routine is to rescue cargoes and ships after lives have first been saved.

Revenue cutters must hunt down and sink the derelicts. Those floating wrecks, steered by wind and tide, have an uncanny genius for getting in the way of their working sisters. Men of the service police the seal islands to prevent the poachers from knocking madam seal on the head and taking her coat away from her. They operate a hospital ship for the fishermen who drag the Grand Banks to

supply New England's tables with fish. They patrol the north Atlantic to watch for icebergs.

A few years ago the revenue cutter service was amalgamated with its offshoot, the life saving service, which for nearly a half century was operated separately; hence the coast guard.

Both branches of what is now the coast guard have a long record, crowded with dramatic and human incidents.

In the annals of both you find story after story that match any of Conrad's or W. Clark Russell's.

For instance, take the wreck of the schooner *J. H. Hartzell*. It happened back in the eighties, in the harbor of Frankfort on Lake Michigan. As the *Hartzell* tacked toward the harbor she was caught in one of those terrific lake storms that are rarely equaled on the high seas. The vessel was swept on the rocks a few hundred yards from the shore. There she foundered and sank in 16 feet of water. The mainmast went over, but the foremast held, and the crew climbed to its cross-trees, the captain clinging to ratlines 10 feet above the water.

A woman, Mary McCann, was a member of



© Charles A. Harbaugh

You might think this scene was taken for some moving picture. The realities of life are more dramatic even than the movies. This picture was made at Plum Island, Massachusetts. It shows the crew of the life-saving station going out through the surf of a severe storm to a wreck off-shore.

submarine chasers taken over from the Navy. In fact, the patrol was organized and for several months carried on by the Navy, with which the coast guard was embodied during and for a while following the war.

Other patrols are maintained in the Puget

the crew. It was said later that she was a cook. The disaster found her in a bunk, ill, but the sailors lifted her into the rigging at great risk to themselves, nailed a plank to the cross-trees, and laid her upon it. They wrapped her in sail cloth as comfortably as they could. One even held her head in his lap as the gale pounded them with tons of icy water.

Nearby farmers discovered the wreck, but they had no means for giving succor to the crew. One of the men ashore was dispatched for help to the nearest life-saving station, ten miles away. Meantime the others arranged on the hillside a kindling fire, that spelled out a signal of encouragement. The men clinging to the swaying mast read through the darkness this sentence written in flame:

"Lifeboat coming."

Finally government life-savers arrived overland with equipment. A life-line was shot to the mast that stood over the sunken boat, and a life car was put into operation.

Men Came First

THE crowd on the hillside saw that a woman was in the party and expected her to be among the first to come ashore. But when the life car was opened only men stepped forth. And the same happened after other trips, until even the captain, coming in the next to the last party, arrived without the woman.

The rescuers gathered around him and demanded angrily why the woman had not been sent ashore.

"She refused to come," he said.

They thought the two remaining sailors on the wreck would force her to come on the last trip of the life-boat, but when it arrived (it was then dark) only the two men stepped forth.

"Why did you desert the sick woman?" asked the farmers.

"She's dead," one of them muttered, "we thought it wasn't no use to bring her body."

They claimed that when taken into the rigging she was delirious and later fell into a state of coma that ended in death. It was then too dark for a life saver to go to the wreck and investigate. When morning came the foremast had been swept away and the woman with it.

Members of the crew were forced to make affidavits to what they claimed, and they then disappeared.

Several days later the woman's body was found. An autopsy indicated that she died

from drowning, which meant that she had been deliberately left alive on the wreck. In view of the traditions of the sea which the crew had observed in hoisting her to the cross-trees and taking care of her there, why did they desert her when help came? Nobody knows, but involved in the problem there was

While the coast guard has many functions to perform, aid to the distressed takes precedence over all others. That aid presumably is limited to distress on the navigable waters of the country, but only one inland station is maintained. It is at Louisville, Ky., by dangerous falls on the Ohio River. One life-saver stationed there made a record of more than 500 lives saved.

The coast guard doesn't construe the law with the bureaucratic strictness characteristic of the average governmental establishment. It is a tradition of the service that it shall render any kind of relief within its purview.

Thus you will find in the brief reports of stations scattered along the sea coasts and the Great Lakes many lines like the following:

"Pulled automobile out of the mud."

"Put out fire in residence near station."

"Gave first-aid relief to sick woman."

Not long ago a life-saver in the New York district rescued a woman and a child from death by ptomaine poisoning. They were taken ill—the child getting it from the mother's breast—and a doctor was far away. They called in a life-saver who diagnosed the trouble and administered the proper remedy.

"You saved their lives," said the doctor on arrival.

And they tell you of the Italian's home near Norfolk that caught on fire last winter. A life-saving crew battered the door down in order to gain entry, for the people inside were asleep. But when awakened the inmates thought the life-savers were burglars and attacked them. There was a fight, for neither could speak the other's language. The Italians were promptly subdued and rescued in spite of themselves—though the mistake so delayed operations that one baby was lost in the flames.

When they point out work rendered on land, outside of the strict line

of duty, you are struck perhaps most forcibly with certain undertakings during the influenza epidemic in Alaska.

The exploit of Surfman L. E. Ashton, an enlisted guardsman from Kansas, in carrying relief to Cape Prince of Wales, on the border of the arctic circle, during the winter of 1918-1919, stands out as one of the most remarkable feats ever performed.

He, with one companion, traveled 160 miles by sled through ice and snow from Nome to the stricken village that is the most northerly of our populated territory. There they found



One of the coast guard beach patrol. During the night and in storms the patrol keeps a lookout for vessels in distress. Each man carries signals by which he can warn ships from the shore or tell shipwrecked mariners that he is bringing them help.

probably an antecedent line of facts that, with the climax, would make a Conradian masterpiece.

The reports tell you also the story of that keeper of the life-saving station at Shark River, New Jersey, who, as he was launching a boat to go to a wreck offshore, received a message that his brother was dying and was begging to see him.

"I cannot come," said the keeper. He helped put the boat into the surf and went ahead to that duty which coast guardsmen place above every obligation of life—or death.

more than a hundred natives dead and practically all the others on their backs with influenza. Turning doctor, he prescribed for them and looked after their nursing with the result that most of those who had not died were saved. He was so busy that it was nearly a month before he could take time to bury the dead he had found.

But for Ashton's work, say his superiors, practically the entire population of the upper portion of the Seward peninsula would have been wiped out by the "flu."

It was no more heroic, however, than that rendered in the spring of 1918 by the crew of the coast guard vessel, *Unalga*, under like conditions in the vicinity of Unalaska. There whole populations of native villages were found ill and unable to attend to their simplest needs.

Buguras and His Orphans

PETER BUGURAS, master-of-arms on the *Unalga*, volunteered to "mother" a group of babies made orphans by the epidemic. He established an orphanage and for several weeks washed, fed and otherwise looked after the inmates, mostly babies, and enjoyed it, though he is as gruff a looking man of the sea as you ever saw. Other members of the crew took care of the elder natives in their homes.

Many of the coast guard's most unique services are performed in Alaska or adjacent waters. There in summer it polices the Pribilof Islands, where the Government owns and operates the most singular animal farm in the world. The islands are the main rendezvous of the fur seals, now protected from poachers by grace of international agreement. Sale of furs is expected to yield the federal treasury no less than \$1,000,000 this year.

But the coast guard's experiences in icy regions are not confined to Alaska and the Behring Sea. In winter one of its vessels, with hospital supplies, cruises among the American fishing fleets off the Grand Banks in the North Atlantic, in readiness to give free service in case of illness among the fishermen whose picturesque lives inspired Kipling's "Captains Courageous."

In summer other vessels maintain the international ice patrol through which tab is kept and warnings given of floating bergs like that which wrecked the *Titanic*.

The revenue cutter branch of the coast guard is devoted largely to relief work wherever it operates, as well as to the enforcement of revenue and navigation laws.

Whenever needed, its vessels go to the rescue of ocean ships in distress, and have to their credit the rescuing of many thousands of people from stranded craft of all kinds, and to saving of property that totals in the millions of dollars every year.

Another duty they perform is to look out for derelicts of the sea, many of which they catch and destroy or tow to ports, and represent strange and untold stories of disaster.

The development of the service is due largely to one man, Sumner I. Kimball, who for long was its director. He entered the government service in 1862. He is still attached though retired.

Whole life-saving crews have been lost in line of duty, though the perfection of life-saving equipment has greatly reduced life losses among them in recent years.

"The old time life saving service when it was recruited wholly from among men who grew up in the surf, stations often passing through the hands of several generations of the same family, was as picturesque in personnel as in work performed," said an old official to the writer. "I've known men to have premo-

nitions of wrecks, even of their own deaths, that came out exactly as they anticipated. I've known them to make their wills in absolute certainty that they would never return from journeys into danger zones. As a rule they are very religious in the true sense, and while they are hospitable and responsive to kindnesses the one thing they most resent are attempts on the part of religious zealots to carry religion to them. They welcome books and visitors, but have no liking for missionaries."

Mention of the proposed transfer of the coast guard to the Navy brings to mind the fact that our revenue cutter and life-saving services are both the oldest and the only ones of the kind in the world. Such as are maintained by other nations function either through their regular military organizations, like the navies, or, as generally the case with life-saving services, through privately directed philanthropic organizations.

Hence, whatever merit there may be in the argument of those who would have the Navy absorb the entire coast guard, there are appealing historical and sentimental facts that would make lovers of romance and adventure regret to see any further change in the status of those two branches of government.

As the law now stands the coast guard becomes a part of the Navy on the declaration of war. And it was the coast guard that suffered the greatest naval disaster in our part of the recent war. The coast guard steamer, *Tampa*, was torpedoed in the English channel and destroyed. Every one of its officers and crew, totalling more than 100, was lost.

A Foreign Trade Platform

By ALLEN WALKER

Manager, Foreign Trade Bureau of the Guaranty Trust Company

PROPOS the interest being shown in the political platforms of Chicago and San Francisco, here is a set of economic principles that deserve the careful consideration of Americans. It could be called a "Foreign Trade Platform," and it has nine planks on which government and industry might unite:

I

Concentration upon foreign fields which logically offer permanent markets for the United States—such territories as South and Central America, China, Japan, India, Dutch East Indies, Australasia and South Africa—because they are less highly competitive in almost every sense than Europe and the Levant.

In this regard it would be, of course, an ideal situation if American enterprise could be induced collectively to buy in the countries with whom the trade balance is now so largely in our favor and expend their exports to the countries where the trade balance is against us, and who now are taking our gold. As a matter of fact, circumstances more surely than we realize are tending to bring about this situation.

II

The encouragement of investment of American capital in foreign enterprise, which offers American control over "key" materials and all raw products of which there is a regular shortage in the United States.

It has been stated that there is little chance of developing American investment in foreign enterprise while there is so much opportunity for attractive investment in the United States. This statement, I believe, has been made without due regard to the extraordinary opportunities which are now offering to American capital in markets of logical permanence for us, and also without regard to the absolute necessity of creating American-controlled enterprises

abroad as the nucleus for that sustained output which must be established for the industries of this country whose output during normal times largely exceeds the domestic demand.

III

Concentration upon constructive rather than upon mere merchandising activities.

What we have been doing during the past few years is to place food, clothing, machinery and other necessities on board a ship, sending it to a man who needs it so badly that he has to take it without any reference to price and calling it foreign trade! That does not take any brains. Neither is there any permanent trade in such merchandising. Constructive, promotive effort in advance of and along with sales and distribution through American agencies alone can standardize the American product abroad.

IV

The development of adequate financial and transportation facilities for all trade routes opening to the United States.

V

The protection of American investment abroad—not necessarily by any show of military or naval force—but by the proper, wise and firm employment of American credit power upon constructive activities overseas.

VI

The investigation of potential markets for American products, not merely in relation to credits, but in regard to all factors and conditions affecting permanent development of constructive commerce.

Such investigation should be organized to parallel or excel the activities now being conducted by the federation of British industries and the Overseas Service of the British Board of Trade. Industries collectively—through their trade bodies—should be encouraged to make such investigations and make available the information thereof.

VII

The procurement and dissemination through responsible channels of information made available at the peace conference concerning the merit of foreign contracts and engineering projects, the appraisal of net worth of same, all of which now lies idle and at present unavailable at government archives in Washington.

VIII

The education of employes everywhere—particularly those of the industrial field—in the fundamentals of foreign trade in their relation to the maintenance of the national prosperity.

Few workmen have ever been given a chance to understand that continuity of employment is largely dependent upon our ability to find and maintain overseas markets, for our surplus products, that industrial expansion is vital to skilled and unskilled labor if a steady labor demand is to continue without recurring periods of depression; and that in most of our major industries today stagnation faces the plants which may not command other than domestic channels for the distribution of their product during normal periods of normal consumption and production.

IX

Immediate attention to the improvement of port facilities in the most important of our national harbors.

The present charges for transportation and handling of products intended for export imposed upon "foreign trade overhead" in some of our leading ports, especially New York, are out of all proportion to other items involved. These charges increase the difficulties of competition in foreign fields in two ways, cost and delay, and are due almost entirely to inadequate terminal equipment and the lack of up-to-date mechanical devices for loading and unloading cargo.

Calamity Howlers Foiled Again! Crops Are in Great Shape and the Labor Shortage Seems to Have Disappeared

BY ARCHER WALL DOUGLAS

THE crop-killing experts and the calamity howlers remind us much of Othello, in that their occupation's gone. The crop failures, which they so industriously forecast some sixty days ago, have come to naught. Nor did it need any especial prescience at the time to know what poor guessers they were. Merely some study of weather happenings for two score years back to copper their bet on what was going to happen.

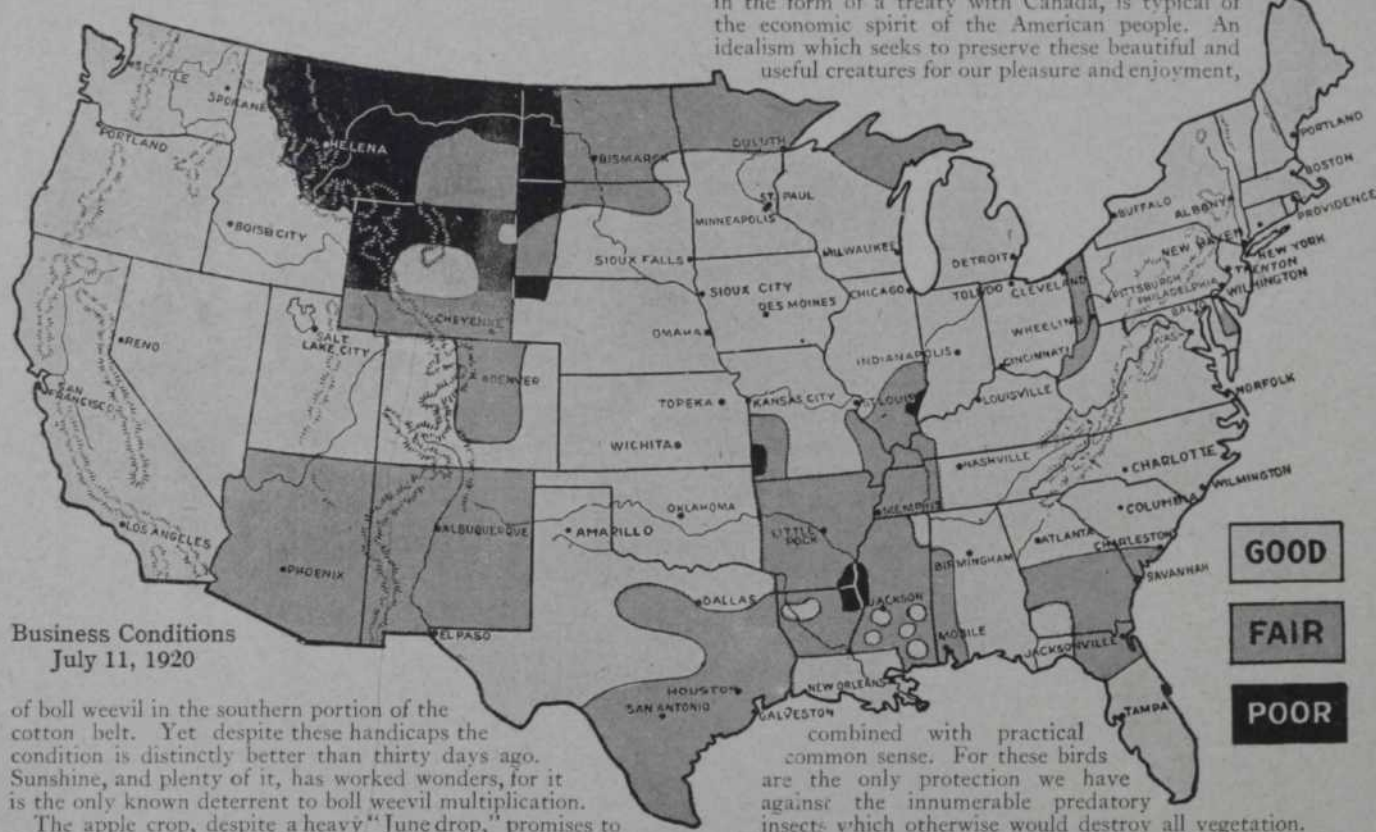
Everywhere the landscape is glorious with growing crops. We shall harvest about 525,000,000 bushels of winter wheat and about 290,000,000 bushels of spring wheat, provided black rust does not get into spring wheat. There will be more oats. Also more hay, an immense yield in fact. And this is of vital moment to all raisers of live stock.

The corn crop looks most promising, but its yield depends on the amount of rain it receives in July. Cotton is coming back, for the plant was never a quitter. It suffers from a late start, a poor stand in some states, and uncounted myriads

whole throughout the country precipitation has been abundant. Small grains and fruits, however, in some portions of California were much damaged by an early drought.

Naturally the question arises: Why are prices of food products still so high when the supply is abundant? There are several reasons. The cost of production is greater than ever before. This is especially noticeable in live stock because of the high cost of feed and of labor. Transportation is more expensive and most inadequate. The demand, both domestic and foreign, is still very large. Then there is the general spirit of the times which asks prices because it can get them. A lessened demand, which will come with a slowing up in general business activity, will be the prelude to lower prices in food.

One of the interesting phases of the agricultural situation is the greatly increased number of all song and insectivorous birds, due to the operation of the Federal Migratory Bird Law. The impulse which supported and finally put this law into effect in the form of a treaty with Canada, is typical of the economic spirit of the American people. An idealism which seeks to preserve these beautiful and useful creatures for our pleasure and enjoyment,



Business Conditions
July 11, 1920

of boll weevil in the southern portion of the cotton belt. Yet despite these handicaps the condition is distinctly better than thirty days ago. Sunshine, and plenty of it, has worked wonders, for it is the only known deterrent to boll weevil multiplication.

The apple crop, despite a heavy "June drop," promises to be the largest in many years. There are numerous people who, like the Shulamite maid in the Song of Solomon, desire to be "stayed with flagons, and comforted with apples." They at least will have the apples this year. What apples mean commercially may be gathered from the statement that about 60,000 cars are annually shipped to market, at a value of about \$72,000,000. They are having a great year in Georgia for peaches. There are three varieties: those which are beautiful to look upon, and hang on gates; those which hit the ball a mile; and those which hang on trees and of which Georgia will send away northward some 7,000 car loads.

Among the growing and important agricultural industries is that of dairying with an annual production worth about \$2,000,000,000. It is supplanting the importation of canned milk in states where the dairy cow was once only the possession of private families.

The great grazing ranges of the west are generally in good condition. There are dry spots here and there, but on the

combined with practical common sense. For these birds are the only protection we have against the innumerable predatory insects which otherwise would destroy all vegetation.

The much feared shortage of farm labor failed to develop. The wheat fields of Kansas during harvest time were overstocked with labor, and wages for harvest hands declined accordingly.

Oil production is increasing, though scarcely keeping pace with a world-wide demand. Development work in Oklahoma, Texas, Arkansas, and Louisiana is said to be "intense." "Wild Catting" goes on in wide spaces.

Buying in general is in large volume, though with more judgment and discretion. Scarcity of goods in many lines continues, much of it due to inefficient and inadequate transportation. There are lower prices in some lines of textiles and in some leather goods. Some textile mills have closed down; others are running on reduced time. Speculation in land is waning. Building continues, though perplexed by strikes, high cost and scarcity of labor and of some building materials. Restricted credits have curtailed building. The general business excites less concern and apprehension as to credit expansion, but the moving of the crops may still tighten up commercial credits.

STRAIGHT LINE METHODS

The Reasons For Trade and Industrial Associations

Trade and Industrial Associations, which exist in practically every line of commercial endeavor to-day, find their logical basis for existence in three self evident facts:—

1. Unity in any line of business means strength to the individual.
2. The accumulation of individual strength means power to the Association.
3. Intelligent direction in the use of power means inevitable progress and success.

Trade and Industrial Associations are of importance in the business world only as they are of practical value to their individual members. They are of such value only as they seek knowledge, and take advantage of opportunities to use such knowledge, to clarify, to simplify and to unify the production and accounting details of their special lines. Under such conditions Trade and Industrial Associations are the greatest forces in the commercial world.

Associations which make it their business to determine just what are the simplest, straightest, and most applicable methods, eliminate waste, not only for their individual members, but throughout their entire industry.

Individual members of such Associations gladly accept the suggestion of such methods and put them into practice—when assured that they are the result of expert investigations covering their entire field.

Such investigations indicate the best working systems in the field and help the individual concerns to make them their own. They show where organization, personnel and material, may be improved. They establish the most modern accounting and cost-finding systems; tell the executive a complete story of material and human conditions as they exist in his every department; and form an accurate basis on which to develop future plans.

In this connection:

Ernst & Ernst offer the services of their tried and experienced staffs of business engineers and expert accountants in the application of their Straight Line Methods of accounting, systems, organization and control.

Ernst & Ernst is an old established firm, long and widely recognized and enjoying the patronage and confidence of America's best business—singly thru their service to individual concerns; collectively thru their service to Trade and Industrial Associations.

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CINCINNATI
INDIANAPOLIS
TOLEDO
ATLANTA
KANSAS CITY

NEW ORLEANS
DALLAS
FORT WORTH
HOUSTON

STRAIGHT LINE METHODS

England's Urchin Marine

The sailor-suited boys about the Round Pond in Kensington Gardens have kept alive the British sea imagination and have had much to do with building up a great maritime power

By **GEORGE T. BYE**

London Correspondent of "The Nation's Business"

MANY a fairy story has become finite fact. It is a truism that the British Navy and the British Mercantile Marine—therefore, the British Empire and the international banking supremacy of London—have been forged and fashioned out of the ephemeral stuff that dreams are made of; and it is this mysterious substance that still maintains them.

Draw up close, and make yourself comfortable. Ready? . . . Well, Great Britain always has been a great business nation. Money does not pour into a country, certainly not into such a climatically unattractive country as England. It is dragged and pushed in, invited, coaxed, commanded or frightened in. But she only began to rise to her position of sea supremacy in the eighteenth and nineteenth centuries.

Nobody consciously roused the country to its great destiny. No one petitioned or prayed Parliament to befriend a shipping industry until it had constructed more ships for Britain than any other nation possessed—after all, that wouldn't have helped; it was more than ships that was wanted.

It came down to this: There weren't enough boys interested in sea life to make it possible to man and captain and direct fleets of ships. They didn't dream of going to sea. Sea

careers were not stylish. It was rough, rowdy, roustabout work fit only for the ne'er-do-well loafer element. Interest in ships was at zero. There were no sea romances, no popular songs about sailormen. The sea wasn't the proper thing—and it didn't become the proper thing until the usual British accident took place.

There was nothing of "British pluck," or "British enterprise," or "British smartness" about this British accident. A queen, Catherine, consort of George II, was interested in laying out royal parks; and in that end of Hyde Park that is now called Kensington Gardens she decided whimsically that a patch of water was needed. Seven acres were dug up for this, cemented, provided with pipes and an overflow drain, and a spacious promenade laid around the edges. This is the famous Round Pond—the germ from which the British sea spirit was born.

As soon as the royal park was thrown open the Round Pond was at once the magnet of attraction. All paths centered on it. Little boys could hardly be dragged away from it—especially the better class little boys whose private schools are largely in London West and Southwest and therefore convenient to the Round Pond. And you might be sure that what fascinated the upper class boys soon

had its reaction in England's lower classes.

They sailed little boats of their own fashioning at first, but soon shops sprang up to supply them with "mass production pattern ships," and there is practically no amateur building today. It became the fashion for superior boys to wear sailor suits; and paintings of little boys of the early nineteenth century show that a jaunty ship in hand was considered artistic—and proper too.

Age Is No Barrier

FATHERS and grandfathers became deeply interested in the caprices of model ships in the Round Pond; Barrie writes of this in "The Little White Bird," and explains the number of bow-legged children in Kensington Gardens by the theory that their fathers needed their perambulators to carry their ships to the Round Pond and the babies therefore had to walk too soon. And there are hundreds of Round Pond yacht clubs for boys and men.

It was sea imagination that the Round Pond awoke in Great Britain, and without it the greatest of fleets would never survive. It is sea imagination as a national faculty that America needs and must have.

There should be a Round Pond for boy ship experimenters in every port in the United States!

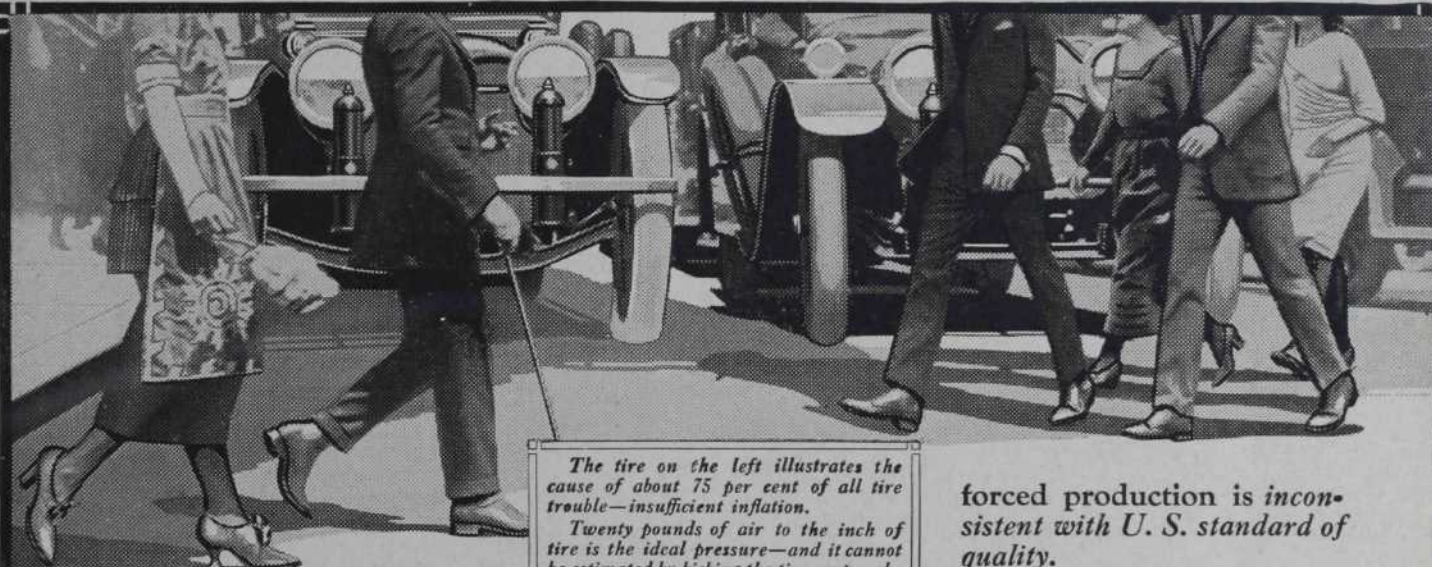


© Western Newspaper Union

There is no limit to the age of those who sail their small craft on the Round Pond. It is not unusual to see old gentlemen with grey beards racing little yachts against those of their

grandsons. Before Catherine, consort of George II, conceived the idea for the pond, there was little talk among the youngsters of England about the romance and fascination of the sea.

Opinions about Tires should be Weighed as well as Counted



The tire on the left illustrates the cause of about 75 per cent of all tire trouble—insufficient inflation.

Twenty pounds of air to the inch of tire is the ideal pressure—and it cannot be estimated by kicking the tire or punching it. The regular use of a reliable air gauge is the best safeguard against punctures, rim cutting and fabric splitting.

THERE is hardly a motorist who hasn't at some time or other in his experience had a tire dealer attempt to sell him a tire by representing it as the fastest seller in town.

More attempts are probably made to sell tires by playing to the motorist's alleged weakness for "crowd of buyers" than by any other known method of selling.

* * *

The experienced motorist of course refuses to surrender his individual judgment to any crowd or mass of whatever size.

Too often he has seen the results of accepting opinions at their face value, without

first finding out *what they are based on.*

And you will find him going more and more to the dealer who has something to offer in support of his tires other than "crowds of buyers" and "numbers of sales."

* * *

The opinion in favor of U. S. Tires is not based solely on the number of them in use.

Great as that number is, it is due to something besides clever arguments.

Thousands of motorists today are putting up with second choice tires because

forced production is *inconsistent with U. S. standard of quality.*

The United States Rubber Company's enormous investment—greater than that of any concern in the industry—has always been aimed *solely* at quality.

Building a *tire* first and a market afterwards. Thinking of the *individual user* instead of the number of sales.

One of the reasons, perhaps, why there is now a scarcity of U. S. Tires.

* * *

If the time ever comes when U. S. Tires can be supplied to all, or nearly all, of the people who want them, they will still have *more to recommend them* than merely the largest following.

United States Tires

United States Rubber Company



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Two hundred and
thirty-five Branches

Wanted: A Master Fisherman

In the sea pastures that wash our shores rove great herds that could furnish us unlimited food if we had a genius to organize the industry and educate the national palate

By JOYCE O'HARA

THE SEA is a many storied treasure house of wealth, waiting for a man who has imagination enough to visualize its possibilities, strength enough to open its doors, creative power enough to convert its riches to human use.

For centuries uncounted men have nibbled about in this great storehouse, like mice in a pantry, unable to get at the best of its treasures, unable to carry much away, wasting and spoiling more than they used. The master-mind has been lacking.

The treasure that waits for this master is not the drowned gold of Spanish galleons, or anything else that appeals to the ordinary imagination as romantic and splendid. It is simply fish—millions of tons of fish that men all over the world need more and more, and which only stupidity and inertia prevent them from having.

This is a very general statement of the case, and it applies more particularly to America. Germany and Japan, for example, have exploited their fisheries with a good deal of skill and thoroughness because they have had to do so. The necessity which drove them to the marine storehouse for food is just beginning to be felt in America. It will be felt more and more acutely. Both the need and the opportunity for big business to organize the American fisheries are growing every year more apparent.

Our fisheries are perhaps the last of our great resources in which little business with its waste and multiple competition, still for the most part prevails. Although there is some modern corporate organization and some modern scientific method now in American fishing, the American fish, generally speaking, is associated with the little fellow from the hook to the frying pan. The one outstanding and unmistakable result is that the said fish often avoids the hook, and



Fisherman's Wharf at San Francisco. These men came from the shores of the Mediterranean and founded colonies of their own along the Pacific Coast. They brought with them their own style of craft propelled by picturesque lateen sails. Most of the fishermen now have modern power boats. A recent innovation is the use of aviators to locate schools of fish from the air.

when he takes the hook he often fails to reach the pan. And his journey between these two points in his destiny is an inglorious and odoriferous affair, as anyone who has ever passed within two blocks of a fish market will attest. Mr. Fish, a potentially valuable citizen, is both literally and figuratively in bad odor.

The American fishing industry is worth a hundred million dollars a year, and it catches about a fifth of all the fish caught in the world. Yet, according to Dr. H. F. Moore, the deputy commissioner of the Bureau of Fisheries, this is not a "shadow" of what our fishing banks might produce. From some of our richest sea pastures we are not taking a pound of food to the acre where we might take ten pounds or more. And the little that we do take is not economically taken, is not adequately distributed, and much of it does not reach the consumer in first-class condition.

Beyond a doubt the fishing industry is in pressing need of the same sort of a modern industrial organization by which we are furnished with bread and meat and fruit, and a host of other commodities. It is not merely that big business organization saves waste and educates public taste. More than that, the big business type of organization is the only one by which the complicated needs of a great civilized country can possibly be served. There is room for much argument as to how that organization should be controlled; but the important point for our present purpose is that we are not going to get fresh fish cheap until some superman or supermen step in and organize the fishing business in the same way that Gustave Swift and Philip Armour organized the beef business.

It seems necessary to emphasize this point because there are still publicists among us who openly and eloquently

hanker for the return of little business and competition, and the small organization in which the boss can shake hands with every employe every morning. There is likewise a widespread public delusion that such an industrial system might be profitably restored. Well, we have that kind of organization right now in the fishing industry and it is not delivering the fish. As a matter of fact, a force arising from the necessities of the case is carrying us always and irresistibly toward higher and more complicated industrial organization.

If anyone doubts this, a comparison between American fish and American beef ought to convince him. Here is a striking and interesting parallel. About fifty years ago, the American beef business stood almost exactly where the American fish business stands today. And the two industries are vastly more similar in their fundamentals



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than you would imagine if you have not studied the matter.

The natural resource to be exploited in the beef business was a vast western pastureland where the half-wild, long-horned herds of Andalusian cattle from Old Mexico were just beginning to replace the hosts of the buffalo. After the civil war men began to round up and brand these herds, and to seek a way of converting beef into money. The way was very hard to find. In the first place, there were no adequate methods, facilities or system for the transporting of the beef either dead or alive. In the second place, there was no dependable market to which to send it. In the third place, there was throughout the east a strong prejudice against western beef. This seems incredible to us, who have been eating western beef all our lives, but every great undertaking encounters prejudices and ignorances which seem ridiculous a generation later.

As a result of this condition, the east got its meat from a number of little slaughterhouses scattered about the country. In these cattle raised and fattened—more or less—on eastern farms, were butchered. Blood and offal rich in nitrogen were thrown away of course. There was neither cold storage nor refrigerator cars. Beef often spoiled. In a given market you could get beef one day, and the next day you could not.

Too Much Beef

MEANTIME in the west there were a thousand and head of cattle for every man. Whoever wanted beef could go out and shoot a cow and take what he needed. The range swarmed with mavericks upon which anyone might clap his brand, but only the more farsighted saw much use in doing it. You could buy a fat steer for four dollars. And there was no dependable channel through which this vast reservoir of beef in the west could flow to the growing hungry crowd in the east. Cattle markets grew up in the wild cow towns at the ends of the railroads—Dodge City, Ogalalla, Wichita. Over the long trail, sometimes a thousand miles, came the great cattle herds to these frontier markets. They came across a wilderness infested with savages. They forded rivers, crossed deserts. They were overwhelmed by storms and stampeded by the wild herds of the buffalo. The cattle trails were marked with graves. And when the herds reached the cow towns often there was no market. Time and again herds came and went away again for lack of buyers.

It was this chaos which Swift and Armour converted into order. In the first place, they established at Chicago a market where any cattleman could sell his beef for its current market value. In the second place they perfected and put into use the refrigerator car. At first the railroads would not haul these cars, but in time the new idea, the necessary idea, prevailed. In the same way, the prejudice against western beef was circumvented, largely by an alliance between these daring buyers of western beef and certain eastern purveyors of meat.

From that time on the development was swift and too complicated to be told here in detail. Methods of using every scrap of the animals were worked out. The breeds of range cattle were improved by the introducing of good stock. The methods of fattening them on mid-western ranches were perfected.

The important point is that when once an organization national in scope had been perfected, the problem was solved. The rest was only a matter of time.

Now the fishing business seems very

different but is, in fact, very similar. Here again the fundamental resource is a great pasture capable of producing vast amounts of food. This pasture, of which the American share is hundreds of thousands of square miles in extent, consists of the "continental shelf," or that part of the ocean adjacent to the mainland where it is not too deep for fishing on the bottom, and of certain inland waters. There are also vast quantities of fish in the deeper waters of the sea, and no doubt in some far future science will find a practicable way of getting them out. But the immediate problem is to get the abundant and easily accessible supplies of the shallow waters.

These waters are a sort of two-story pasture. On the bottom dwell such fishes as the cod, the hake, the haddock and the halibut. Nearer the surface swim the vast schools of those nomads of the sea, the pelagic fish, such as herring and mackerel.

The Trouble Was the Market

WE have seen that in the early days of the cattle business there existed a vast supply of beef and a means of gathering it; but no dependable market, no adequate methods of storage or shipment, and a prejudice against the use of the product which had to be overcome by education. In essence we have seen that the difficulty was due to a lack of organization on a national scale.

The fishing business stands in almost exactly the same case. In some places like Gloucester and Boston good sized companies operate fleets of vessels, usually on a share system with the fishermen. In these places, the catch is usually well handled, and modern methods of shipment and storage are used. Likewise in Alaska the salmon fisheries are pretty well organized. And there are some other spots where the industry is carried on in a modern and efficient manner. But these are only patches of efficiency on a vast amorphous mass of haphazard work. The American fishing industry, as a whole, is an army of men, poor, half-equipped, without scientific knowledge of organization, setting out in rowboats and sailboats, casting their nets and lines. They are often brave, hard-working men doing the best they can with the means at their disposal. They seldom have any adequate means of storing their catches. They seldom have a dependable market, and are often wholly lacking in any but a local one. And at the market itself, conditions are little better. In big cities there are modern and sanitary ones, but the average American cannot think of a fish market without wrinkling up his nose. Yet fish, properly kept on ice and under glass, can be made an especially attractive commodity. Dr. Moore says that a fish market can be made as attractive as a florist's shop. Certainly that is an achievement which has been left for the future. But the average fish market with its stale odors, its slimy goods floating in a mush of ice and water, its flies and dirt, is a disgrace.

Here, then, is the same lack of dependable markets, wholesale and retail, and of the means to reach them, that presented Swift and Armour with their problem and their opportunity. Here again, upon analysis, the lack is seen to be one of national organization. The essential need is for a mind which can see the business of feeding fish to the American public as one vast and complicated, but perfectly unified undertaking, and for the capital to put that vision into terms of storage plants, refrigerator cars and fishing fleets. The methods are all there and perfected. It is said that a modern otter-trawl fishing vessel can gather more human food

for each unit of man power in a given length of time than any other device modern industry has produced. And it is this device, which in the face of a threatened food shortage, we are failing adequately to use.

This parallel between fish and beef is still more striking when we come to the other great obstacle which Swift and Armour encountered—that of popular prejudice. Here, indeed, the Napoleon of the fisheries will have an even greater struggle than did the creators of taste for Chicago beef. For the prejudice of the American public against fish in general, and certain kinds of fish in particular, is one of the strangest and most illogical things in the world.

In our coastal cities there is a highly developed taste for sea food, but, like the ethics of Confucius, it is based on the worship of ancestors. When the first settlers came to these shores a few centuries ago they were used to eating cod and haddock and mackerel and a few other kinds, and they went on eating them. Their descendants are eating them still. And the worst of it, they won't eat anything else in the way of fish. The Bureau of Fisheries has again and again published impressive lists of the valuable food fishes which swim in our coastal waters, but which the fishermen must throw away because there is no market for them. The praises of the goose fish and the burbot and the skate have been considerably sung in the press of late years, and to a very small extent some of these fish have come into use. They are all excellent food and highly prized in Europe. Their commercial exploitation is solely a matter of education—a problem for the modern advertising man. And he has never yet been stumped.

As you go inland, the problem becomes still more embarrassing. Even such staple fish as the haddock and the whiting, low priced and in surplusage on the coast, are unknown and unused for lack of organized distribution and advertising. A Nebraskan, for example, will generally pass over that part of the menu which treats of fish without a glance. He goes straight for the meats. He was raised on beef, and he has not the habit of eating fish at all. In his country there are no indigenous fish except a few disconsolate mud-pouts inhabiting horse ponds and sluggish streams. The meat market in his home town sells a few fish shipped in by express as a sideline, but there is no great demand for them, and nothing about them to inspire much of a demand. Yet this man can be taught to eat fish. It has been done in other countries.

Modern industrial organization, with the advertising man leading the way, can feed even this plainsman fish to the great benefit of both his health and his pocketbook.

Britain Has a New Dye

THE British Dye Stuffs Corporation, Ltd., have discovered that their Huddersfield Laboratories are manufacturing Laisarine cyanine, a green dye, on a commercial scale after experiments extending over a period of two years, says the American Chamber of Commerce in London. This green dye was first discovered in Germany in 1894 and was manufactured exclusively by Germany before the war. The exact chemical details were guarded and no information was given to chemical associations nor allowed to appear in technical journals. The special characteristics of the dye are that when applied to wool fine green shades are produced which remain fast.



Carrying Kerosene to Light Evening Hours around the World

As each day rolls into evening shadows, the service of the tank car is registered in millions of tiny sparks that spring up. Mankind defeats darkness by lighting its lamps.

Despite electricity and gas, kerosene still is the universal illuminant—extending American commerce to every nook and corner of the globe. In centers where it has been supplanted for light, it is affirmed a necessity by oil heaters and oil cooking stoves. It is an essential power for motors and often is employed as fuel oil. The tank car, matching the vast facilities of its production, is all-important in its transportation.

Standard Tank Cars personify the strength and endurance necessary for the kerosene shipments that keep the burners filled.

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"All about Tank Cars," a complete guide for tank car users. Data includes all the detailed and general information lessees and owners should have for the safest and most economical operation of cars. Mailed postpaid from St. Louis to any address on receipt of price—\$5.

Standard Tank Cars

The Log of Organized Business

MORE than 1,500 young business men attended the first annual meeting of the Junior Chamber of Commerce of the United States held June 17, 18 and 19 at St. Louis. The National Junior Chamber, which is an outgrowth of the successful Junior Chamber of St. Louis, was organized last January. Twenty-four cities were represented at the organization meeting.

Enthusiasm displayed at the first convention of Junior Chamber augurs well for its future. Although the new organization is only six months old it has an underlying membership of 50,000 and is rapidly spreading.

Henry Giessenbier, Jr., of St. Louis, president of the Junior organization, in an address before the convention asserted that increased production and a reduction of living costs could be effected better if the business man would cooperate more closely with the farmer.

F. N. Shepherd, manager of the Field Department, represented the National Chamber in the absence of President Defrees. He encouraged the young men in the work they are undertaking and said that branches of the Junior Chamber all over the country could do a great service by acting as centers for formulating sound public opinion among young business men with respect to the great national questions.

Other speakers at the convention were Niel Brown, assistant editor of *America at Work*, "Our Relations with South America and the International Significance of the Monroe Doctrine"; Carl J. Baer, manager of the Production Bureau of the St. Louis Chamber of Commerce, "Production and its Relation to Finance"; and Charles Nagel, former secretary of Commerce and Labor, "Immigration in Relation to Production." Throughout the convention special emphasis was laid on production through a closer cooperation between the city and rural community.

Plans for the future development of the organization were thoroughly discussed at the convention. Chief among the contemplated activities for the future will be the formation of a bureau for the organization of Junior Chambers of Commerce throughout the United States. As a special feature in this connection, Colvin Brown, chief of the Organization Service Bureau of the United States Chamber of Commerce, will speak at a number of conferences for the spread of information pertaining to the organization of Junior bodies.

The purpose of the Junior Chamber, as set forth in its literature, is "to promote cooperation among the young men's business and civic organizations, to increase their efficiency, and create and foster the growth of such organizations to provide avenues of intelligent participation of the young men in the study of the city, state and national problems and also to advance their character and business efficiency. It shall be the further purpose to secure the cooperative action in advancing the common purpose of its members, uniformity of opinion, and sentiment of opinion upon problems affecting the commercial and civic interests of the country."

Against Rent Profiteering

THE New Orleans Association of Commerce is extending its activities so as to protect the citizens of that city from rent profiteering.

In spite of fogs and squalls, the good ship forges right along, thank you, and there are events aloft and below that are eminently worthy to be recorded

The Association's sentiment on the rent problem is set forth in the following resolution:

There are landlords in this city who have already notified tenants in the business districts they will raise the rents on October 1 100 to 150 per cent above those paid in 1919.

Be it resolved that as this new method of profiteering is detrimental to the growth and progress of our city, the board of directors of this Association be respectfully requested to instruct the legislation and taxation bureau to prepare as quickly as possible a law to be presented to the legislature to protect tenants from such arbitrary and unjust action.

Wants Latest Ideas

IN ORDER that it may have the benefit of the latest and most advanced thoughts in all lines of community development, the Oklahoma City Chamber of Commerce has established connections with the following national organizations: The Chamber of Commerce of the United States, the American City Bureau of New York, Federal Trade Service Bureau of Washington, the Public Affairs Information Service of New York, the Merchant's Association of New York, the National Governmental Research Conference, the National Fire Protection Association, the National Board of Fire Underwriters, the Municipal Library of New York, the American Civic Association, the American City Managers' Association, the National Municipal League, the Southwestern Open-Shop Association of Dallas, and the National Short Ballot Association.

Department of Women's Affairs

IN LINE with the movement to welcome women into the councils of the Chambers of Commerce, the Des Moines, Iowa, Chamber of Commerce has established a department of women's affairs.

In referring to the new department, the official bulletin of the Des Moines Chamber of Commerce says:

The organization of this department was inevitable; and the committee on Chamber activities and service has done some wise work. There is scarcely a similar organization in the country; and again Des Moines has established a plan and has given an idea worthy of emulation.

Safety Council for Akron

KEEPING step with the safety first movement that is spreading all over the United States, the Akron, Ohio, Chamber of Commerce has decided to establish a safety council.

The safety council was recommended following a successful safety campaign in Akron. In order to establish a safety council a secretary, experienced in safety organization work, will be brought to Akron to organize the whole community and the industries into one large safety committee for the prevention of accidents.

"Open Shop" and Prosperity

THE result of the open shop means prosperity for the country in general, says the Philadelphia Chamber of Commerce in its official bulletin. "Open shop conditions will stimulate industry, quiet unrest, and make possible a larger expansion of business," the bulletin goes on to say. "It does not in any way interfere with membership in labor unions. It does not mean a non-union shop. It means free employment to men whether they are members of unions or not, and prevents interference by union men with workers who are not members of unions who are willing to work. It also prevents what is one of the greatest annoyances in building trades, a sympathetic strike."

San Francisco Gets Results

THE San Francisco Chamber of Commerce usually gets what it goes after. Its latest effort was rewarded recently, when the United States Shipping Board allocated to San Francisco seven fine trans-Pacific passenger steamers, five of which will ply between San Francisco and the Orient, and two between San Francisco and Honolulu, under the Matson colors. In addition to these ships the shipping board has also assigned five other passenger vessels to the Admiral Line at Seattle, and these also will be placed on the oriental run.

Branch House Memberships

THE question of branch house membership is one that has agitated the membership committees of the civic organizations throughout the country for many years. The principal difficulties seem to be in convincing the home offices that they should in all fairness bear their share of the burden of supporting the civic organizations in the cities where they operate branches or sales agencies.

A campaign has just been begun by the St. Paul Association of Commerce to convince the firms and corporations having branches in St. Paul that they benefit from the efforts of the Association equally with the local and business enterprises and that they therefore should become members of the association.

Compliments for Hartford

THE Hartford Chamber of Commerce has received much commendation for its crusade against "get-rich-quick" promotion schemes. A little card entitled "think it over," designed for pay envelopes, has been sent out in response to requests of Hartford business houses to the number of more than 30,000.

Holyoke Chamber

THE distinctive value to the community of its Chamber of Commerce was vividly illustrated at the beginning of the recent out-law railroad strike when the Holyoke, Massachusetts, Chamber of Commerce took immediate steps to transport commodities to and from Hartford in event of a complete railroad breakdown such as was threatened for a time.

A fleet of three local automobile trucks was secured and every means provided the owners to secure full loads to New York and Boston, and steps taken to determine what loads they could secure to bring back to Hartford. In addition to these trucks the Chamber of Commerce of Holyoke secured an option on five Springfield trucks and seven New York trucks.



The Talk of a Giant Industry—the P.A.X.

YOUR automobile is among the 7½ million in the United States which testify to the gigantic growth of the Automotive Industry. Manufacturing on so vast a scale must see to it that the mass of details runs smoothly; that the output of the individual worker is kept at highest pitch by saving time and waste motion wherever possible. Many of America's foremost Automobile, Truck, Tractor, Aero, Tire and kindred organizations solve these and other problems by means of the Automatic Electric Services of the P.A.X. (Private Automatic Exchange.)

The P.A.X. centralizes management, promotes co-ordination, simplifies detail and eliminates lost motion. Some of the great automotive and allied industries which rely on the Automatic Electric Services of the P.A.X. are Continental Motor Manufacturing Company; Dodge Brothers; Electric Auto-Lite Co.; Goodyear Tire and Rubber Co.; J. P. Gordon Co.; Hydraulic Pressed Steel Co.; Maxwell Motor Co., Inc.; The Metz Co.; Morgan & Wright; Nordyke & Marmon Co.; Republic Motor Truck Co.; Willys-Overland Co.; Standard Aero Corp.

The Automatic Telephones of the P.A.X. at all times, for 24 hours every day, give prompt, accurate and secret interior communication.

The Code Call of the P.A.X. locates instantly any official or department head and puts him in communication with those who seek him.

The Conference Wire of the P.A.X. enables several persons to hold a round-table discussion with secrecy, dispatch and accuracy, without leaving their desks.

The Watchmen Service of the P.A.X. perfects the human protection thrown around a plant and makes every telephone a fire alarm or danger signal by which help can be instantly summoned.

These and many other unified services that speed production and lower costs, are given over a single pair of wires operated by a simple dial.

Investigation will prove the value of the P.A.X. to your organization. A booklet, giving further details, will be gladly sent upon responsible request.

AUTOMATIC ELECTRIC COMPANY

Dept. 165 1001 Van Buren Street
CHICAGO



Among thousands of American industries this dial has become the symbol of perfected organization. It controls all the automatic electric services of the P.A.X.—paging, fire alarm, watchmen, conference and interior telephone calling.



Why Not Grow Engine Fuel?

The gasoline shortage is upon us, but the bottled sunshine of trees and plants can be turned again to energy. Already the lumber industry is waking to the possibilities

By ELLWOOD HENDRICK

Author of "Everyman's Chemistry," "Percolator Papers," Etc.

SUN AND RAIN and brains, that is all we need to check the lowering supply of automobile fuel. Sun and rain a kindly nature provides, we even have the brains but we are slow in getting them to work. So slow that we throw away each working day in one industry alone, 600,000 gallons of fuel.

Alcohol is an answer, not the complete answer, and all we need for alcohol is sun, rain and again, the brains. There are half a dozen other possible sources of fuel, but to each there is a present insurmountable obstacle.

I shall not attempt to prophesy about oil shales. These are oil-bearing rocks of which great deposits are found in Colorado and the Rocky Mountain region and in New Brunswick, and elsewhere in Canada. There are deposits in Scotland, in France, in the Balkans, in South America and in other countries, but so far as the writer is aware no economical, satisfactory retort for distilling shale oil has yet been devised. Without doubt, shale oil will be used. Indeed it has been distilled and used in Scotland for the past seventy years, but on a small scale. There is every reason to believe that the production will be more expensive than petroleum, and how the costs will compare with alcohol is an open question.

It is not within reasonableness that enough benzene (also called benzol) and light oils will be produced from coal-tar to supply the requirements for transportation by automobile. Even if we reform our present uncivilized methods of mining coal and wasting it, grading and washing and wasting more, transporting it and wasting more coal and more expense, dumping it and wasting some again, carting it to yards and wasting more coal and more value, and then burning it and wasting most of the heat in the process, there will not be enough coal oil to supply our needs for traction. Even if we burn the coal at the mines and pipe the gas or generate the power and transport it by wire and save all the ammonia for fertilizer and the light oils for fuel, we shall not have enough.

As a complete automobile fuel, benzene is disposed to carbonize, although it is useful in mixtures. Over half the coke now produced in this country is made in by-product ovens and the light oils saved. If we make all our coke in this way and drift away from the antiquated candle-power standard for city gas and measure it by the more enlightened method of heat units, and if we change our methods of burning coal to central stations in which the production of gas predominates, there will probably be enough benzene and light oils of tar to improve the efficiency of a considerable part of the fuel used; but that is as much as we can expect.

Acetylene with air makes an explosive mixture, but it is inconvenient owing to the heavy steel cylinders required to carry it. More particularly, however, the amount of power that is required to produce calcium carbide to furnish the acetylene makes us shake our heads. There is a vast amount of unused power in this country; an immense amount of it constantly going to waste; but as

BOX CARS are lacking, ship by truck."

"Father's got a raise, let's buy a car."

The automobile increases in number and the price of gasoline goes up as the supply dwindles.

What's the answer? There are many, and one of them is alcohol from wood waste, from otherwise unusable molasses, from corn if the prices of a decade ago ever return, or better yet, from some rapidly grown plants.

The lumbermen and the sugar growers are waking up to the possibilities. *The West Coast Lumberman* in a recent issue said:

"When the enormous waste of many of the larger mills is considered, and when it is considered that from each ton of that waste 22 gallons of absolute alcohol might be produced, the solution of the threatened gasoline shortage is obvious."

The Louisiana Planter appeals to the sugar refiners to wake up saying:

"Low-grade molasses was once almost unsalable, sales being made down to one cent per gallon in tank cars and thousands of barrels absolutely thrown away. Now low-grade molasses has the opportunity of becoming a great staple to take the place of gasoline."

—THE EDITOR.

soon as it is developed, industry will call for it.

Liquid hydrogen has been proposed for airplanes in war time to meet other conditions than the requirements of economy, but we should need power to obtain it and power again for refrigeration and pressure to liquefy it.

In the light of our present understanding there seem to be but two fuels available to furnish power for automobiles, and these are gasoline—whether obtained from crude oil or from shales—and alcohol. The art of cracking petroleum, as it is called; that is, the art of obtaining gasoline from petroleum from which the gasoline has already been distilled off, is making constant progress, but cracking does not keep up with the increasing demand, so that while we may expect still greater yields from the crude that is pumped, the best that we can expect is that it will help some. I forbear to give figures because it would be the most vapid kind of guessing. I can not see a buyers' market for gasoline unless we curtail our motor-car transportation, and that is a question of economics rather than of chemistry.

Alcohol is now made in vast quantities in this country from the cheapest known material—molasses. This by-product of the sugar

industry is brought here in tankers from Cuba and other sugar-producing centers. Great 60,000-gallon stills are employed and the manufacture is under control of chemical technologists of the highest rank. But the industrial requirements of alcohol are far beyond the ordinary belief. They include, to mention but a very few of them, drugs, celluloid, and like substances, soaps, cutting oils, tobacco products, artificial feathers, imitation leather, artificial silk, photographic materials, chloroform, ether, cutlery, cocoa butter, dyes (in great quantities), enamels, lamp filaments, fertilizers, varnishes, paints—and we could cover a page with more of them.

These industries are provided for by domestic manufacture, principally from molasses, and the excess product is mixed with hydrocarbons, such as gasoline and benzene, and sold for fuel in automobiles and flying machines. It is easily sold at a higher price than gasoline on the ground that it is cleaner and goes farther. But it is not a drop in the bucket. Molasses, as we have observed, will furnish some alcohol for motor fuel but we are looking for quantities far beyond its capacity.

The Question of How Much

ALCOHOL is now made in appreciable quantities from acetylene. This is interesting in that it is a synthesis of alcohol from the elements that compose it, instead of the more general method of fermenting sugar to alcohol and carbonic acid gas and then distilling off the alcohol. With acetylene we begin with calcium carbide, which requires great power and lime and coke for its production. Calcium carbide and water produce acetylene and there are a number of processes to carry this over to alcohol. But when we consider the amount of power needed to produce the carbide we can not see any prospect of the quantity required. We can't get 4,000,000,000 gallons into focus.

The waste-gas from coke ovens contains from 1 to 4 per cent of ethylene. This may be removed from the gas and changed to alcohol—if the price is high enough to make it worth while. This is just what, in looking for fuel, we do not wish for.

The making of alcohol from sawdust and wood waste is now on a paying basis. The process consists in the treatment of the cellulose in the wood by a mild acid solution under pressure, whereby the cellulose is split down to a readily fermentable sugar and the sugar in solution is fermented to a beer as in other alcohol processes, after which the alcohol is distilled from the beer. It pays and it can help.

Dr. Arthur D. Little, of Boston, who is a leading authority on the subject, declares that the waste wood of the yellow pine industry alone could produce 600,000 gallons of ethyl alcohol (and this is the true grain alcohol) per day. Counting 300 days a year this would give us 1,800,000,000 gallons of spirits. It would also give us 40,000 tons of paper, 3,000 tons of rosin, and 300,000 gallons of turpentine per day together with the fuel necessary for these industries in addition to the lumber we get now. These figures are not idle



*Learn How DIFFERENT CITIES
ARE MEETING THE Housing Problem*

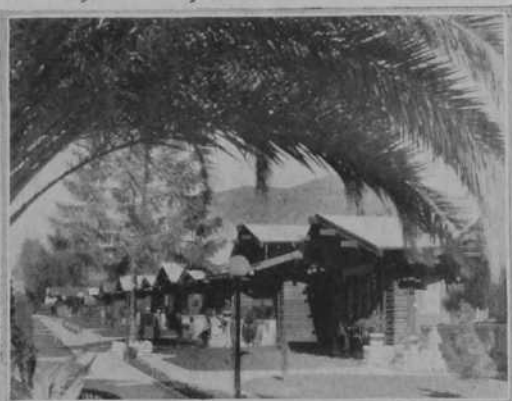
The Southern Pine Association has accumulated the facts relative to the ways and means, provided by many Corporations and Cities, for financing and encouraging home building. These facts have been published in a small booklet which the Association will gladly send free on application to any address. It contains much valuable information.

—Write for it today.

HOMES!

*The Nation's
Greatest Need*

Nothing contributes as much to peace and contentment as *Homes*. Home ownership—the natural creator of prudence, sane living and thrift—is the most potent combatant to recklessness, extravagance and speculation. National patriotism and civic spirit demand that every community concentrate greater attention on the building of more homes. Help keep alive that apt and important slogan: "OWN YOUR OWN HOME."



Southern Pine Association

NEW ORLEANS, LA.



WORKMANSHIP

All sprinkler, heating and power piping installed by Globe bears witness to Globe workmanship in two ways: First, each detail of the system carries the stamp of conscientious thoroughness; and second, the installation as a working unit demonstrates the excellence of its construction by dependability in service.

The Globe Branch in your vicinity is ready to assist you in your piping problems. A telephone message secures their service.

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GLOBE



guesses; they were reached after exhaustive study and experiment.

The figures, however, assume a coordinated industry which does not exist and is even forbidden by law to exist. Their principal value is that they point to our industrial shortcomings, rather than to probable results within this generation. Slowly and very gradually wood waste is beginning to be brought into industrial use—in spots.

Lumber May Give Out First

THE trouble with looking to wood waste to supply us with alcohol is that, at the present rate of development, the complete utilization of wood products instead of selling one-third and wasting the rest, as we do now, may be a long time away. In fact, our supply of timber may be pretty well exhausted before we get around to it. If as an industrial people our ambition were as keen to make Bogey as it is to make profits, we could easily count on from 2,000,000,000 to 3,000,000,000 gallons of alcohol from wood waste per year. And if we had this quantity we should probably be replanting trees. But we must figure on great changes in lumbering methods before we can count on an appreciable amount of fuel alcohol from wood waste. An important step in advance would be for lumber manufacturers to convert their sawdust to sugar solutions and evaporate these to a thick molasses, shipping the molasses in tank cars to distilleries, rather than distilling at the sawmills. The expenditure of a reasonable sum for research to obtain better yields of sugar is very desirable, and there is reason to believe that this would give favorable results and add a fair margin of profit to the sawmill operations.

The yield of alcohol from the cellulose of wood waste is far short of the theoretical possibility. Wood contains about 50 per cent of cellulose, but there is some doubt as to what this cellulose really is that is, converted into fermentable sugars and then into alcohol. Cotton, for instance, does not respond so readily to this treatment and cotton is, practically pure cellulose. And there is cellulose left over in the refuse of the sawdust after treatment, although a repetition of the process gives very little fermentable sugar. The portion transformed is sometimes called "easily attacked" cellulose. In practice a ton



As the world's supply of oil becomes less, the uses of internal combustion engines grow. Through increasing numbers of tractors, they help put the bread on your table. It has been estimated that America's 48,000 saw mills have annually 36,000,000 cords of waste. A great deal of this is burned under boilers and the rest of it thrown away—much being consumed in burners such as that shown above. Some day this wood will be used for alcohol and converted into power.

of sawdust is said to yield 21 gallons of 95 per cent alcohol. By an expensive process as much as 40 gallons alcohol has been obtained from one ton of dry wood.

In chemical manufacture the yield's the thing, and, theoretically, the yield of alcohol from wood waste may be greatly increased. That pesky cellulose molecule, however, is a very devil to chemists and until its structure is better known advancement is likely to be slow.

Then, too, it may be possible to grow some lusty annual shrub in warm climates and bring down the cost of alcohol to real competition with gasoline. This is only a possibility now, with good prospects for the next generation. In other words, there is a good source of alcohol on the other side of the fence. We

can see it but we can't reach it.

The usual source of supply in the place of sugar or molasses is starch; starch in any way we can get it. Here we need to point out the great cycle of nature to bring the process a little nearer to us so that we may understand how alcohol is our natural fuel along with petroleum or mineral oil, and why we haven't got it.

Every green leaf of every plant is a chemical laboratory. Through the valve-like openings of its cells there drift from the air two gases: water vapor and carbonic acid gas. Within the leaf there is a product, made in the plant, called chlorophyll which is a catalyst, and the business of a catalyst in chemistry is to cause reactions to take place which would not take place if it were not there. Chemistry is a very human study, and every one of us knows human catalysts.

For this reaction between carbon dioxide and water within the leaf there is needed heat, which comes from the sun, and pressure which is furnished by the walls of the cells. The result is a combination of a number of molecules of water and carbon dioxide into molecules of sugar. But the plant does not need sugar; it needs starch for a reason that we shall soon discover; and the sugar molecules or unit particles are then bunched together, or polymerized again by means of sun heat and pressure; and the result is starch, which has nearly the same proportions of carbon, hydrogen and oxygen as the sugar, but a larger number of the atoms of each in its molecules.

At the proper time the starch is sent along through the twigs and deposited in the seeds. But the plant has other business in hand besides the making of starch for seed. A similar process of bunching the starch molecules goes on and gums are produced and a final step is the making of cellulose by a similar process; for cellulose and most of the gums have nearly the same chemical content and in the same proportions as the sugar and the starch. And cellulose is the structural basis of every cell of every plant or tree.

Now we see that we need not worry as to the raw material for alcohol. The point is to make it. We have cellulose in every stalk and tree, and starch in every seed and nut. In most plants sugar is little more than an intermediate product, and the great sugar

source for alcohol is molasses. The supply, as we have noted, is practically preempted so far as such a quantity as we want is concerned.

In this country we still use corn to make alcohol. The corn is mostly starch and that is treated with a diastase, such as barley malt, whereby it is converted into sugar. Then, in the presence of the yeast plant, sugar in solution enters into the cells of the plant and there it is split up by an enzyme into two substances: ethyl alcohol and carbon dioxide or carbonic acid gas. And that is beer. The alcohol is distilled from the beer. It takes two distillations to produce 95 per cent alcohol.

The Germans grow a special unedible potato for starch for alcohol, a very large potato that is rich in the material needed. We could grow such potatoes, or we could grow sugar beets, for the same purpose as they do in France, provided the price of gasoline is high. Alcohol cannot compete well under present conditions with gasoline, but when it gets scarce or the price gets to or above 50 cents a gallon we can begin to figure on alcohol.

The corn crop of the world in 1918 was a little less than 3,000,000,000 bushels, of which 31,140,000 bushels was grown in the southern hemisphere, and the United States produced 2,582,814,000 bushels. Back in 1907 the cost of alcohol from corn at 40 cents a bushel was given at 15 cents for material and 3½ cents for making, or 18½ cents at the distillery. Now corn is worth \$1.50 a bushel and the making probably has more than doubled in price, so that it must cost nearly 65 cents.

As an Aid to Gasoline

THIS does not include packing or transportation or profit or distribution. Present automobile engines are not equipped to use alcohol alone, but a mixture of alcohol and other hydrocarbons is, as we have said, better than gasoline. A practical comparative test was made with five-ton trucks in New York hauling building brick, and the average mileage on gasoline was 2.9 miles per gallon, while the same trucks traveled 4.2 miles on a gallon of the alcohol mixture prepared and sold by a great industrial alcohol company. There was practically no coking from the alcohol mixture and a saving of 40 per cent on lubricating oil.

If we had no petroleum and were compelled to use alcohol the engines would have to be redesigned. That is merely a problem in engineering. Such engines exist already and have been in use in Europe, and it is the least of our troubles.

But we come back constantly to the quantity needed. With corn at present prices it stands to reason that there is other use for all the corn we grow, and to make a dent in the demand for 4,000,000,000 gallons we should need a great increase in production and far lower prices. In 1918 there were 107,494,000 acres planted in corn, or a little less than 168,000 square miles. That is a greater area than the states of New York, Pennsylvania, Ohio, New Jersey, Maryland and Delaware.

That gave us 2,500,000,000 bushels. When gasoline gets really scarce and we learn the value of mixing alcohol with it, say up to 40 per cent, we shall need fully 2,000,000,000 gallons of alcohol or, counting 2.7 gallons to the bushel of corn, about 740,000,000 bushels more. This means an increase of between 28 and 30 per cent. We have never raised that much corn, but in 1911 we came within less than 100,000,000 bushels of it.

It can be done, and could be done now, if farming practice were better and labor were available. And whether we make alcohol out

of corn or potatoes or grains, the situation remains that to feed the automobile industry we must improve our farming methods and get better yields.

That is the crux of the situation. We can not grow corn or potatoes under present conditions to make alcohol to compete with gasoline. But if it goes up to 50 cents a gallon and stops there, and if industrial scientific farming is developed which will bring better yields and lower prices, then alcohol will surely come in, first of all, for mixing with gasoline and benzene.

A formula for the cost of alcohol from corn would be to divide the price of corn per bushel by 2½ and add 5 cents a gallon for the making. Then we can compare this with the cost of gasoline to the refiner—if we know what his costs are.

The situation in regard to alcohol then is this: It is the normal fuel for explosion engines and if civilization advances instead of going backward it must come into general use. All that is needed is sunshine, rain and greater intelligence in man. But it is not in sight yet. It cannot be obtained by a conference of financiers, negotiations with a trust company,

and an issue of stock. To provide alcohol for our needs will require of us:

The removal of legal inhibitions to co-operation in industry.

The reorganization of the lumber industry by men who know enough chemistry to see the uses of wood waste and who know how to put their ideas into practice. The man that says he can hire all the chemists he wants, is able to do so, so far as numbers go; but he does not know how to select his men or to understand what they say or when to believe them and when to be skeptical.

The reorganization of agriculture so as to obtain better yields of starch and sugar-bearing products.

Research in organic chemistry as to the structure of the cellulose molecules.

Research in biochemistry with a view to the development of yeast plants or molds that produce a greater yield of alcohol from sugars in solution.

There is hardly a limit to the amount of alcohol that can be produced, provided only, we are organized to produce it. But it is still on the other side of the fence. We shall have to improve ourselves and our works to get it.

Straight to the Sun for Power

Why bother to get it second hand from coal and oil? One inventor started by hitching his wagon to a star and his patent is open to all.

By HARVEY FERGUSON

DON'T WORRY about our lessening supplies of coal and oil. There need be no collapse of the industrial world as long as the sun goes on shining.

For the sun of course is the source of all power and one way to run our factories and heat our homes would be to go direct to the sun. In an experimental way it has been done already a number of times.

Of course the conversion of sun-heat directly into steam or electricity on a commercial scale, and the application of it to all the various work of civilization is a very different matter from the making of a successful laboratory experiment. No one can foresee what practical difficulties would be encountered. It is probable that man will go on using the power which nature has stored in the earth as long as it lasts; that he will supplement it first by a careful development of all water power resources; by the making of fuel alcohol on a large scale, and that the direct conversion of sun heat into power will come last. That it will come ultimately there is little doubt. And some scientists of conservative reputation and high standing will tell you that this development is overdue now. They say it is only the immense inertia of men as a whole, their devotion to habit, and their lack of properly organized scientific enterprise which prevent the speedy development of sun-power plants.

When asked to explain how such a plant might operate, this scientist said there was nothing either secret or speculative about the matter; that patents on apparatus for the purpose had been taken out both in this country and abroad, and that the machinery had repeatedly been applied as power on a small scale. One of these patents is held by the Bureau of Standards and any American citizen can obtain the right to manufacture under it. At least one commercial organization has been formed in this country for the manufacture of a sun-heat power generator, and it has built apparatus and placed it on the

market, but without attracting any widespread attention.

The Bureau of Standards patent is for an electrical generator and is the invention of Dr. W. W. Coblentz. Strangely enough, in perfecting the device he was not trying to make a heat generator, but to measure the heat of stars. By connecting two tiny flakes of metal of different kinds, he made a thermo-couple which would set up an electric current when light was focussed upon it, just like any other electric battery. Dr. Coblentz made a thermo-couple of such delicate sensitiveness that it would register the heat of the North Star, which, he estimated, would raise the temperature of a gram of water one degree centigrade in a million years.

It is evident that if you made a thousand of these little thermo-couples and exposed them to the heat of the sun, you would generate much electricity. The manufacture of the many small parts would involve no real difficulty. The watch manufacturers solved that problem long ago. The chief practical problem would be to devise a means of storing this electrical energy so that you would be sure of a continuous supply on days when the sun was not shining.

☞ Sun heat could obviously be converted into steam as well as into electricity. The principle that a mirror of parabolic form will concentrate all rays of light striking it on a certain point, could be used, for example. Imagine a mirror a block long, bent into the form of a parabolic trough, with a water pipe suspended at the point in front of the mirror on which the sunlight will focus. If the mirror is of the right size in proportion to the pipe, the water will be converted into steam.

Nature sets man an example by her economical use of power. Take the matter of light. The heat—that is power—necessary to make an electric light is so great that it adds perceptibly to your discomfort on a hot night. Nature makes light with so little power that you can scarcely detect the heat.



A fire department you never heard of

HERE it is—posing for its picture. No clanging bells or shrieking sirens. No red lined coats. Nothing spectacular.

Just a few skilled workmen—yet these men save the ladder and the engine crews many a trip by making roofs fire-safe with Asbestos. For the time to put out fires is before they start. And there is no better way to prevent roof communicated fires than by covering roofs with Asbestos.

Moreover, it is not only through fire protection that Asbestos makes roofs safe, but also through weatherproof durability. In fact, Asbestos seems ordained by nature to be roofing material. This wonderful fibrous mineral is

not only absolutely fire-proof, but in roofing form, it is immune to the disintegrating effects of sun, snow, hail, ice, rain, smoke and acid fumes.

On the big flat roofs of industrial plants and other buildings you will find Johns-Manville roofers applying permanent fire prevention with Johns-Manville Asbestos Roofing.*

And on thousands of smaller buildings the owners themselves, or their employees, are doing the same. For the many different types of Johns-Manville Asbestos Roofing give everyone the opportunity to protect what is ordinarily the most defenseless part of his building—the roof—with one of these roofings.

H. W. JOHNS-MANVILLE CO., New York City
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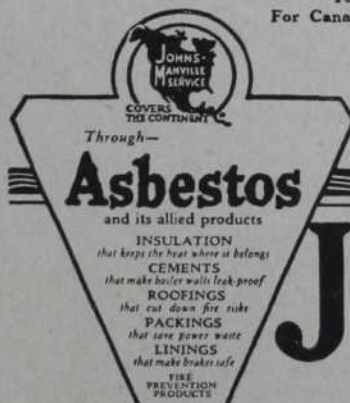
*In sixty-three cities throughout the United States and Canada there are Johns-Manville Branches, which have crews of expert roofers constantly employed in laying Johns-Manville Asbestos Roofing on large roof areas.

And for the thousand and one types of modern buildings—including dwellings—Johns-Manville Asbestos Ready Roofings and Shingles are handled by dealers and dealer-contractors everywhere.

Asbestos Roll Roofing, Johns-Manville Standard and Colorblende Asbestos Shingles, Johns-Manville Asbestos Ready Roofing, Johns-Manville Corrugated Asbestos Roofing, Johns-Manville Built-Up Asbestos Roofings.

Johns-Manville Asbestos Roofings are approved by the Underwriters' Laboratories, Inc.

All Johns-Manville Asbestos Roofing is backed by Johns-Manville Service and Responsibility. Through our Roofing Registration Service we are able to keep in touch with Johns-Manville Roofing in Service. This is your assurance that it will give the service claimed for it.



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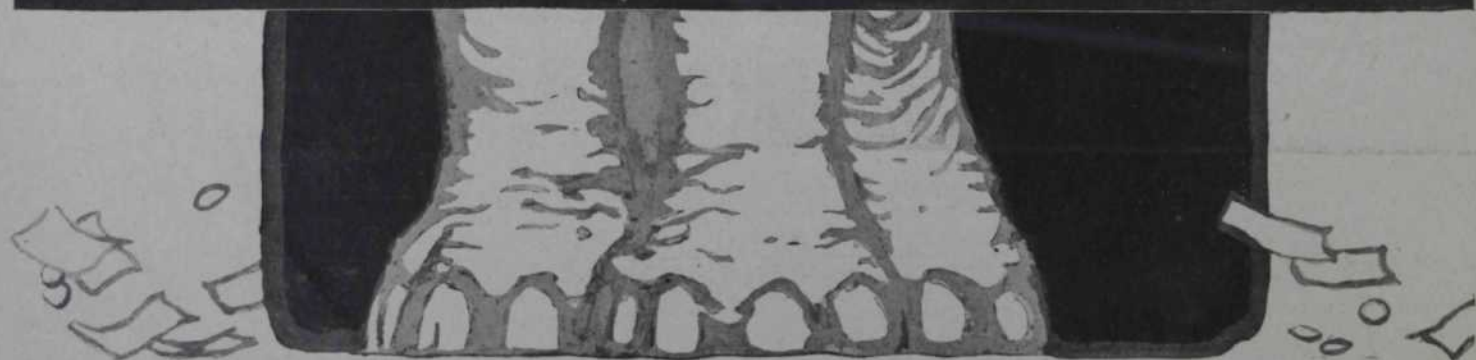
Serves in Conservation



"That's a fine looking Daily Report, Dan, but the best thing about it is the saving of 48% on the cost of printing it."



PRINT it on the



*The elephant ate all night;
The elephant ate all day.
Do what they could,
Work as they would,
The cry was still, "MORE HAY!"*

YOU HAVE a white elephant on *your* hands—the printing elephant. He's a regular *mammoth*, and he's simply *eating his head off!* More and more of your good money goes into his capacious maw—and with *less and less* results.

Every little while printing costs advance. Every little while it becomes harder to get the finished job when promised—when you must have it.

Every day you lose money— your salesmen lose orders and get cancellations, your factory employees are held back on rush jobs, your office force has to mark time or sidetrack urgent business—all because you can't get the printed things absolutely necessary to modern business—can't get them when you want them, or can't get them at all!

But there is hope! You can change that printing white elephant into the greatest little go-getter for business you ever saw, by immediate application of this great idea—*Print it on the Multigraph!*

What the Multigraph Is

Please get this right! The Multigraph prints—P-R-I-N-T-S! It is *not* merely "one of those duplicating devices," but a compact printing plant, consisting of:

A typesetter, which sets typewriter and other styles of type faces as desired

A small, rapid, rotary printing press, printing from real type, and from curved electrotypes, in colors, with illustrations. Hand or electrically operated. Automatic feed.

A multiple typewriter, for producing highest grade typewritten letters in quantities, through a ribbon or direct from type.

What the Multigraph Does—and Does Not

Pick out any of your business helps—office or factory form, letter-head, enclosure, folder, bulletin, price list, house organ—anything but a big, complicated job—

The Multigraph will print it at *HALF* the cost (or less) in *HALF* the time.

No highly skilled labor required—any bright employee can operate the Multigraph.

Absolute privacy—the work all done inside your office.

No fuss or muss—the Multigraph does *not* turn your establishment into a print-shop. It occupies only a limited floor space.

Why the Multigraph Saves

In addition to the big saving—25% to 75%—in the actual cost

of printing, there are other even bigger and more vital savings.

A big saving of time—no lost momentum due to delay in getting necessary printing.

A big saving of sales effort—Multigraphed sales helps reduce the time and effort necessary for salesmen to get and hold business.

A big saving of advertising effort—Multigraphed follow-ups drive home the effect of your advertising, get action, help cash in on the advertising effort.

A big saving of opportunity—with the Multigraph you can strike while the iron's hot—*every* time.

In fact, the only time the Multigraph doesn't save when it's idle.

Who Can Use It?

Almost any live business man who uses printed matter or form letters, or who *should* use them but doesn't.

This Isn't Half the Story

Not even *one-tenth* of what you ought to know. Ask for *all* the facts and figures—applied to *your own* business.

You can't buy a Multigraph unless you need it

THE AMERICAN MULTIGRAPH SALES CO., Cleveland, Ohio

Offices in Principal Cities

THE INTERNATIONAL MULTIGRAPH CO., (Britain) Limited, 15-16 Holborn Viaduct, London, E. C. 1

THE INTERNATIONAL MULTIGRAPH CO., Paris, 21 Boulevard des Capucines

THE MULTIGRAPH SALES CO., Ltd., 84-88 Bay St., Toronto, Canada. Offices in Principal Canadian Cities

MULTIGRAPH

THE MULTIGRAPH SENIOR

This is a complete, compact equipment that turns out high quality printing and form typewriting at very low cost—averaging a saving of from 25% to 75%. It is simple and easy to operate; rapid and convenient. Electrically driven, with printing ink attachment, automatic paper feed, signature device, automatic platen release and wide printing surface.

THE MULTIGRAPH JUNIOR

This is a wonderfully efficient equipment for concerns which have a limited amount of work. It does both form typewriting and office printing and produces the same high quality of work as the Senior Equipment, but it is hand-operated only and cannot be equipped with electric power, automatic feed and signature device attachments, as can the Senior.

The Multigraph

1818 E. 40th St., Cleveland, O.

I want to hear the other "nine-tenths" of the story. Tell me more about the Multigraph and how it PRINTS.

Firm _____

Our line is _____

Name _____

Official Position _____

Street Address _____

Town _____ State _____ N. B. Aug.

Cave Dwellers of New York

There is a vast and unseen army in the metropolis that works underground to care for the far greater army of workers moving to and fro through the tubes and subways

By J. WAINWRIGHT EVANS



Photographs courtesy the New York Public Service Commission

NEW YORK is more than a towering skyline. It has reached down as well as up. And as it harbors millions above its pavement level, so it harbors other millions beneath that level in a tremendous underworld of subways, basements, cellars, and subcellars. Traveling, working, playing, and living underground in New York there are more human beings than would populate some of our biggest cities.

The man who goes to his work daily in the subway, spending from one to two hours underground, knows from his experiences at rush hour something of the sheer bulk of that human tide which ebbs and flows and roars its way hour after hour and day after day through those echoing tunnels, over those six hundred miles of track. It never stops. It never will stop.

And its tides run not alone through the straight paths set for the trains; they swerve aside on foot into all kinds of unregarded eddies, bays and backwaters, apart from the main stream. In these places they remain for the period of the working day; then flow out again into the current.

Most of the stream is made up of the multitudes who pass underground on their way to and from work. Thousands of them, those who move aside from the stream before it debouches at the surface, never emerge into the outer air at all. Generally they slip away through tributary foot tunnels into great buildings of the business section. In the upper reaches of these buildings they have their work. There they remain through the day; at night they descend again into that underworld without having once been from beneath a roof. Others work either in the subways themselves or in the basements and subcellars of those great buildings, and never go above the pavement level.

These are not just a handful. They are a vast army. There is not a big building of

importance in the business section of New York that does not go from three to five stories beneath the sidewalks. And this is true, not alone of office buildings, but of big hotels. Here is an underworld indeed. Lighted by electricity, ventilated by forced drafts of washed air, these three, four, five story underground industrial plants are communities in themselves. They contain, many of them, from one to three million dollars' worth of equipment, operated by thousands of workers of every degree of skill—men and women who mostly come there by subway and tunnel. Some of them, during the winter months, leave their homes in the morning before light and return to them after dark, and never see the sun the winter through save on their days off.

The Host in the Hotel Cellars

IF you want to understand just how involved and complicated the activities of these subcellar communities become, make a trip down into the foundations of one of those big hotels. Understand that this queer community has been designed by skilled engineers to supply the above-ground needs of a concentrated residence section of possibly 2,000 rooms; to provide every sort of equipment and help that the care of those rooms and their occupants may require.

That is a large order. It means that the industrial center underground supplies heat, light, waterpower, ice, laundry, service, distilled water, food, cooking, fire protection, cleaning facilities, washed and cooled air, storage, elevator transportation, police service, spare equipment, turkish baths, barber shops, flower shops, drug stores, soda fountains, cafes, and every other requirement which the modern hotel, intended to be the last word in

A geyser made in the East River, by escaping compressed air from submarine tunneling. In putting through one of the tubes a workman was caught in the jet of air and shot through the water to the surface. An amazed tug crew picked the man up and he soon recovered.

service and convenience, can require. From the power plants where men stoke great furnaces and run great machines in the lowest of those underground reaches, up to the cafes and small shops in the first basement, all or nearly all of this work is beneath the sidewalks.

A kitchen in such a place is a community in itself. There are hotels whose kitchens even make the fine candies which they sell to their guests. One room of the kitchen is a busy meat market, with a force of butchers.

In another corner you see other specialties. The cooks are specialists. What the eye sees first is endless tiled floors; then rows of kettles that would delight the eye of a South Sea Islander who preferred his missionaries whole; then rows of copper utensils over rows of ranges whose thermometers and timing devices help make cooking in such a place the exact science it is.

The laundries are further down. The guest who arrives by late train, and must leave early in the morning, and wants his week's wash by eight o'clock when he would expect to wait three days for it if he sent it to his laundry at home, might be impressed if he could see the scores of washing machines and drying machines and starching devices and mangles through which his clothing goes in jig time; while in some other section, perhaps overhead but more likely underground, his suit is being pressed, all while he sleeps.

Before turning in, the guest rings for ice. Ice appears on every table. It is used by the bushel at the soda fountains for packing ice cream and for the making of drinks; it is used by the hundred weight further down for making the ice cream. The hotel uses possibly sixteen or seventeen tons of ice every 24 hours. When the guest rings for ice water, therefore, he



Office Building, Proctor & Schwartz, Inc.



Machine Shop and Garage

A Modern Textile Machinery Plant

is that of Proctor & Schwartz, Inc., formerly the Philadelphia Textile Machinery Company, located appropriately in the great textile manufacturing city on the Delaware.

This company needed a drying machinery plant. When Day & Zimmermann, Inc., were called in the ground had been bought and plans for a sawtooth machine shop prepared.

The services of Day & Zimmermann included the survey of the site, testing of ground for foundations, checking of machine shop plans and the making of a layout which would provide for future expansion as well as the needs for the time being.

We also made detail plans and specifications for a two-story office building, heating plant, garage and for grading, plumbing and heating system for the first unit of the layout.

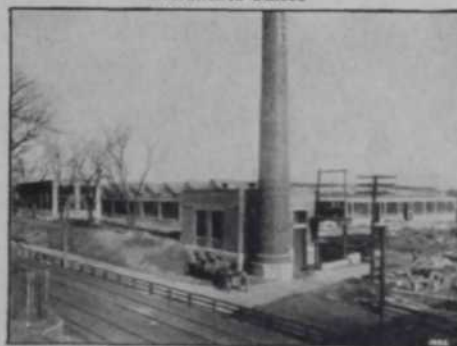
Plans are now in hand for an additional four-story building to take care of the production demands for the immediate future.

One requirement for this plant was a roomy garage. It must not disfigure the general layout. The office building stands on a hill. We placed the garage, large enough to accommodate twenty-eight automobiles, in the hill, with front doors convenient to the office and rear doors, to the machine shop.

Day & Zimmermann experience and personnel enable us to visualize the future in such a way that haphazard planning is obviated and sound provision for growth is assured.



Entrance to Offices



Machine Shop and Office Building



DAY & ZIMMERMANN, INC.

Engineers

Chicago
Engineering

PHILADELPHIA
Management

Reports

New York
Valuations

might be interested could he see the ice plant doing its work for him down there amid the rumble of machinery and turning wheels, and capable of producing twenty to twenty-five tons a day if need be.

Light and electric power from vast engine rooms, water power from the same, and further down the boiler rooms and the rows of furnaces with men feeding them coal with great scoop shovels. It is hot in the boiler room but it remains bearable because of the wide-mouthed ventilators from which cooled air pours out in floods. And in the furnace room the same cooled air drops from the mouths of great pipes in the ceiling like a continuous shower of comfort.

Making Their Own Breezes

THAT air doesn't come from the street where the thermometer registers ninety, and where men flee the sun. It comes from a chamber like a cave of the winds. In you step, hanging onto your hat. You are in a room packed from floor to ceiling with muslin screens, which stand ten or twelve inches apart. Through these goes the air to be filtered, and from there through chambers that are filled with the spray of needle baths, which wash it and cool it. Then only is it ready for the man in the boiler room and the man in the furnace room, and the worker in the laundry and in the upper basements, and further up in the lobbies, halls and rotundas.

What is true of the big hotel is true in its degree of smaller hotels and of office buildings. The office building has its great plants and its army of men operating that equipment. And its first story down is like the first story down of many a hotel. Small shops, cafes,

barber shops, safe deposit vaults, haberdasheries, and every kind of enterprise find lodgment there, with an aggregate employment list that is very long.

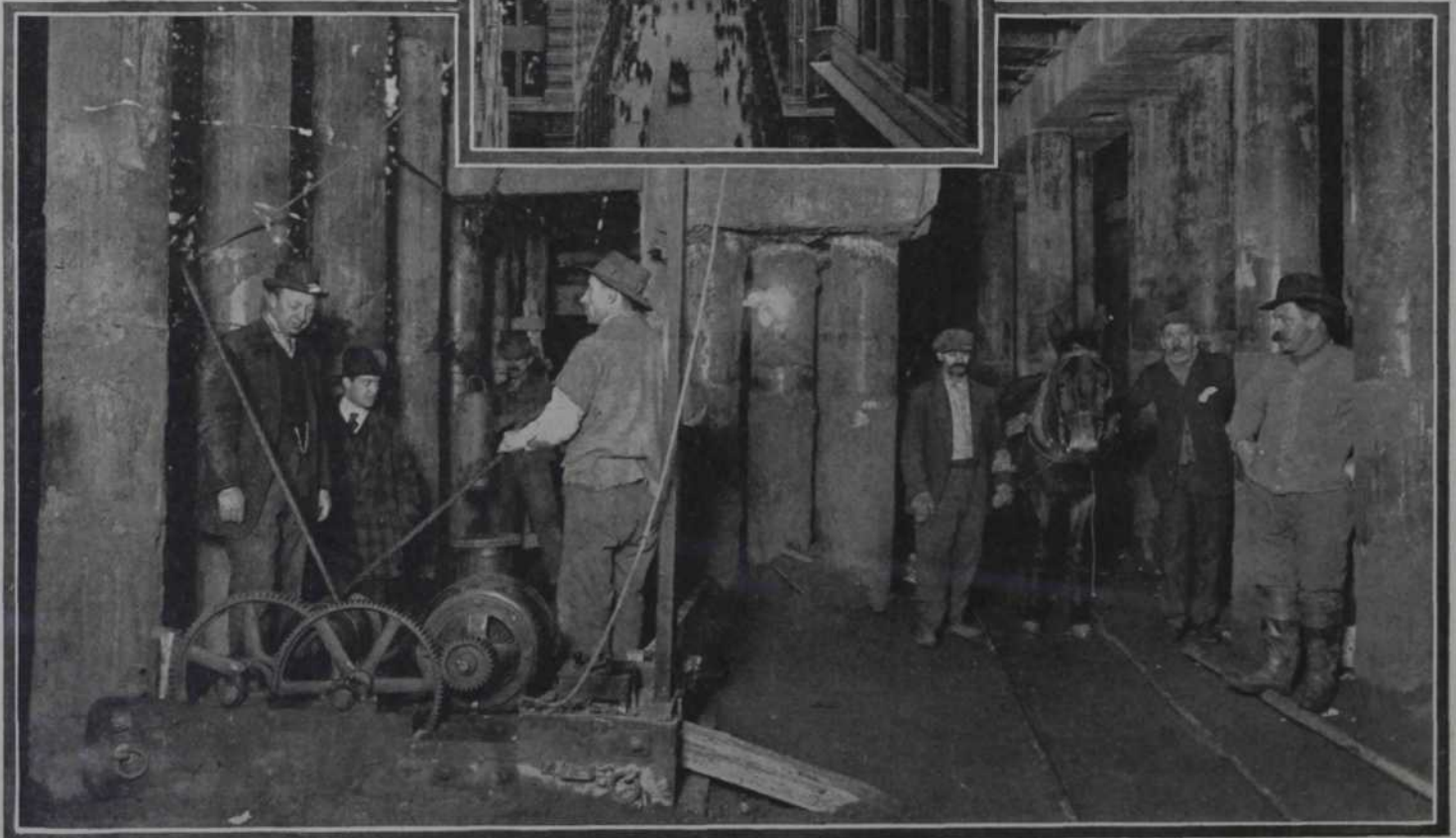
Many department stores have doors which open from their basements right into the subway. Mrs. Jones, of Brooklyn,

having taken the subway in Brooklyn, and having stopped at some stores there that connect with the subway, has come to New York. She may shop at any one of half a dozen stores and never come out on the street at all. And if she wants to remain to dinner downtown with some friends go to the theater later and spend the night in New York, and do some more shopping the next day and meet a friend in Jersey City or Hoboken and finally return to Brooklyn when she gets good and ready, she might do it all without having ever taken a sniff of outside air.

As to the range of travel possible to her, if she chose to go through the various ramifications of the subway, that is limited only by her ingenuity and her knowledge of the map. She can weave back and forth through the mazes of the Interborough, the Hudson Tubes, and the Long Island route from the Pennsylvania station.

Incidentally she can visit the downward reaches of the Pennsylvania and the Grand Central stations—an underworld that dwarfs anything else of the kind by comparison. Here trains that come from the ends of the country arrive underground on different levels; baggage is handled underground; there are store-rooms underground; and there is the swarm of human moles who keep the whole thing moving, some by day and some by night, with no way of dividing the light from the darkness save by the clock. For here center the railways of a continent, and the work of handling the trains and their baggage and their human freight is an underground job—the biggest underground job in the world save the subways themselves.

Mrs. Jones, of Brooklyn, can continue



Over and under the skyscrapers. Above is William Street that had to be propped on stilts, as shown below, while workmen put through an artery of the subway. The mule in the picture

was a famous character. He was once the guest of honor at an underground banquet of officials and engineers. He finally came to his death through an accident below the street.

MEAD-MORRISON SERVICE

LIFTS THE LOAD OF INDUSTRY

MEAD-MORRISON material-handling equipment, backed up by Mead-Morrison Service is doing valuable work and saving time and money in varied lines of the nation's industry.

Mead-Morrison Engineers have, in each unit of the Mead-Morrison line, built a material-handling machine whose power, dependability, economy, and length of life has been proven by performance.

No problem is too intricate for this efficient combination of utility and service. Mead-Morrison Engineers see to it that the purchaser not only gets the proper equipment but that each piece is utilized to assure maximum usefulness.

Mead-Morrison's practical constructive engineering experience in designing and building large units throughout the country has aided them in producing the following line of material-handling equipment

**Steam Hoists
Electric Hoists
Grab Buckets
Conveyors
Car Pullers
Winches**

Our latest complete catalog illustrates and describes all Mead-Morrison Material-handling equipment. Write for it.

HOISTING MACHINERY AGENTS

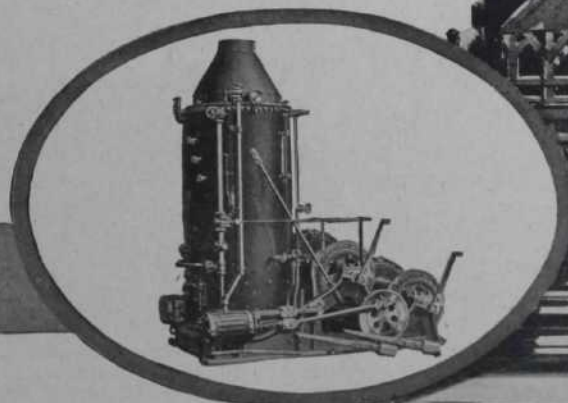
| | |
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| Beckwith Machinery Co. - - Pittsburgh, Pa. | J. W. Dopp & Co., Inc. - - Detroit, Mich. |
| Beckwith Machinery Co. - - Cleveland, O. | The Equity Equipment Co. - - Cincinnati, O. |
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MEAD-MORRISON MANUFACTURING COMPANY

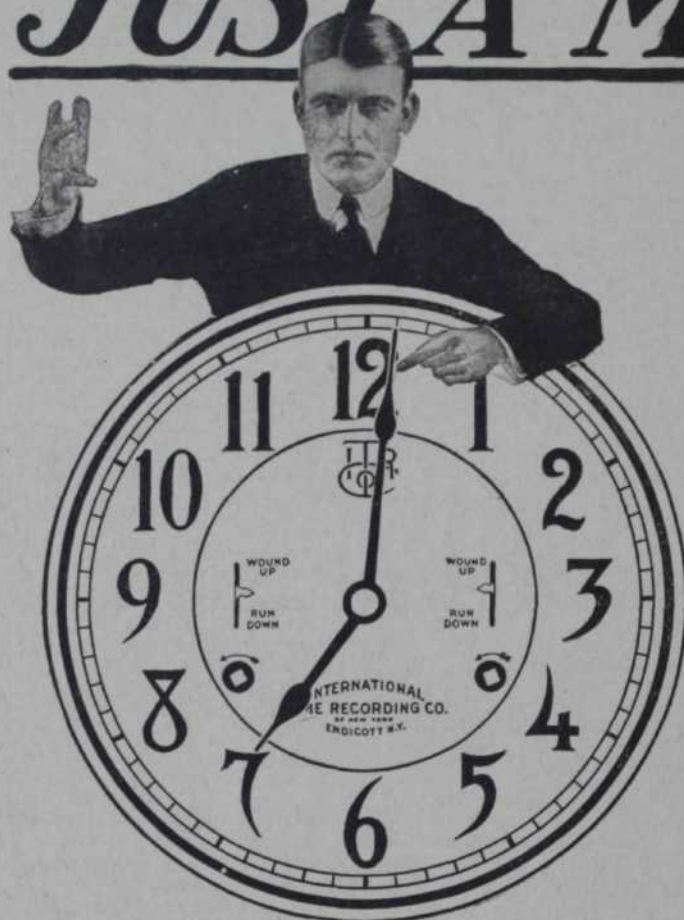
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JUST A MINUTE!



Here's Its Value—

The following table is based on the loss of *four minutes* a day, by each employee, for 313 working days, of eight hours duration.

Arriving a minute late in the morning—Leaving a minute early at noon—Returning a minute late from lunch—and Leaving a minute early at closing time—See how soon these mount into big money losses!

| Rate of Wages Per Day | Loss by 1 Employee | By 10 | By 25 | By 50 | By 100 |
|--------------------------|-----------------------|----------|----------|----------|-----------|
| \$2.75 | 7.17 | 71.73 | 179.32 | 358.64 | 717.28 |
| 3.00 | 7.83 | 78.25 | 195.63 | 391.25 | 782.50 |
| 3.50 | 9.13 | 91.29 | 228.23 | 456.46 | 912.91 |
| 4.00 | 10.44 | 104.33 | 260.83 | 521.67 | 1013.33 |
| 4.50 | 11.74 | 117.40 | 293.50 | 587.00 | 1174.00 |
| 5.00 | 13.04 | 130.40 | 326.00 | 652.00 | 1304.00 |

INTERNATIONAL Time Recorders

furnish a mechanically correct Time Record for each employee. There is a style of International Recorder for every business.

Write for Particulars

INTERNATIONAL TIME RECORDING CO.

Oldest and largest manufacturers in the world of Electric and Spring-Driven Time Recording Devices

Home Office: 50 Broad St., New York City.

Works: Endicott, N. Y.

LONDON OFFICE
57 City Road, Finsbury
London, E. C., England

CANADIAN OFFICE AND FACTORY
International Business Machines Co., Ltd.
270 Dundas Street, West, Toronto

PARIS OFFICE
77 Avenue de la Republique
Paris, France

Branch Offices and Service Stations in all Principal Cities of the World



*International
Card Time Recorder*

her trip under cover if she likes by taking a transcontinental train in one of those great terminals. She will never see the open sky till she is well on her way, and she need never leave a roof till she reaches San Francisco.

Another remarkable phase of this adaptation is to be found in such great subway concourses as that of Hudson Terminal, Times Square, and Grand Central. The traffic movement at Grand Central is one of the wonders of the world. It comprises surface cars, elevated structures, and two separate track levels by which the New York Central and the New York, New Haven and Hartford systems bring in their great traffic. In addition there is the shuttle train to Times Square, the local and express tracks of the Lexington Avenue subway, and at a lower level still the Queensboro extension of the subway.

The Hudson Terminal concourse forms another example of the variety of trades that may be driven underground. It is practically an underground fair. Mrs. Jones can go there, and by stopping at the booths of certain department stores order what she wants without looking further. The orders will be transmitted and filled. She can buy

her own and her husband's clothes, she can pick up a typewriter, or a phonograph, or a toy for the baby, she can buy hardware, kitchen ware, bread, rolls, milk, candy, washing machines—in short, anything under the sun she can need for the running of her home.

So far as the workers of this great underground world of New York are concerned, it is obvious that the most wonderful part of the life is that which has to do with the transportation itself. The Interborough alone carries a million and a half fares a day, and is said to take in about thirty tons of nickels. These multitudes have to be cared for and carried safely by the skill of an army of men maintained for the purpose. Where railroad men do their reckoning in minutes a subway worker has to do his in seconds. A tie-up of minutes in the subway at rush hour is worse than several hours tie up on a steam road. Pass by the men who actually run the train and think of the hundreds who simply watch. At given points along the road sit men in booths with their eyes glued to a moving picture of their section of the subway. Moving lights show the position of every train—when it stops, when it arrives at its station,

when it pulls out. Then there is the army of track walkers who tramp their way through those endless tunnels, tapping the rails and testing the track at every joint. And there are the men who mark the passage of the trains on complicated blanks; and the inspectors who travel up and down the line, and can call every man in the place by his first name, and have eyes that seem to see through the very darkness itself. And there is the force of detectives who are busy all the time watching for crooks and catching them.

But the big hotels and office buildings and terminals and subways are merely the broad strokes of the picture. There is more than that. The busier parts of the town are lined on either side with buildings of all sizes, hundreds of which go down one or two stories, and contain their quota of underground life. Here the basement or cellar space gives accommodation to numberless bake shops, small restaurants, barber shops and baths.

There are more than 26,000 occupied basements and cellars of every size, kind and condition in New York. The janitors and their families who live in some of them would themselves populate a fair sized city.

The Outposts of Industry

Lone men patrol our wildernesses killing outlaw animals, guarding our forests, and even disturbing the lady-bug's slumbers to enlist her aid in behalf of your breakfast melon

By MABEL H. WHARTON

WE ARE a people who easily take things for granted. When we desire something we pay for it in cash or by check. But do we ever stop to think of that other man, that man behind the scenes, who has paid in loneliness, privation and daily risk of his life, before it came to be our privilege to hand over our money? That taciturn, monosyllabic man of the wilds who goes his solitary way through the changing seasons, protecting what eventually becomes our daily bread and meat—consider him a moment.

The clock would strike twelve many times in a year, finding you without your accustomed steak or chop, were it not for the outlying hunter of the range. True, he is not gunning for your chop. He seeks other game. But with faithful old "meat-in-the-pot" slung to his shoulder, he is faring through blizzard and snowstorm, nevertheless. Each night, while you rest in your steam-heated apartment, he sleeps under the stars exposed to the elements.

For he is after some wary, battle-scarred, old timber wolf whose years of cunning have made him wise in the way of traps and hunters. If the hunter does not come up with him, your steaks and chops will cost you more. If he gives up the chase altogether and allows that wolf to raise a myriad family of grandsons and great-grandsons, the meat you eat could eventually disappear from your menu entirely. You may become an enforced vegetarian, always providing that some other silent man of the wilderness "stays with" another particular job so that vegetables also may not vanish.

A single wolf has been known to kill in six months one hundred and fifty head of cattle valued at \$5,000. In the spring of 1919 a mountain lion was killed in Wyoming which in one month destroyed \$1,000 worth

of livestock. In less than three months six coyotes slew three hundred sheep in Texas valued at \$3,200.

They live high, these marauders of the western range. A yearly estimate of the loss in New Mexico showed that 3 per cent of the cattle, or 34,000 head, and 165,000 sheep had gone to feed predatory animals. This means some \$20,000,000 worth of live stock. Remember also that, before poisoning campaigns were planned, rodents such as prairie dogs, squirrels and rabbits ate \$150,000,000 worth of food crops and the depredations of house rats, even, exceeded a total of more than \$200,000,000. You can see what a hole even the small animals gnaw in the national food supply!

Those are some of the reasons why the Government is sending out skilled men into the wilds, men inured to privation, who stay on the job, no matter what the danger to themselves, to safeguard the meat and wheat of the ranges.

The Department of Agriculture has placed this work under the Bureau of Biological Survey. With war emergency funds added to regular appropriations of last year, the work against predatory animals has been conducted on a greater scale than at any time since its inception four years ago. In addition to this, states, counties, and stock-growers' associations have added more than \$800,000.

This money pays a force of from 400 to 500 skilled hunters who work on a salary. They receive no bounties. The hides taken are turned over to the Government and sold. Last year they brought \$76,128. The destruction of more than 32,000 predatory animals saved stock valued at \$5,000,000. Over 500 wolves were killed, 150 mountain lions, and coyotes and bobcats by the thousands.

But there's another very different type of

wilderness hunter: A man up in the fastnesses of the frozen Sierras searching out the hibernating nests of millions upon millions of little red and black spotted lady-bugs, such as we see in our summer gardens. And what is the reason? This: were it not for the lady-bug and the large family she raises you would look in vain for your out-of-season breakfast melon or grapefruit. So a lonely, cold, sometimes hungry man is after lady-bugs, floundering in breast-high snow through deep canyons and scaling jutting cliffs, in the frozen Sierra winter. You simply must have your out-of-season melon.

A Living Cloud

DID you ever try to walk through a swift moving rosy cloud of hibernating lady-bugs? Even in the high Sierras there are not many who have seen this phenomenon. But the man from the California State Insectary has. Earlier in the season, he searched out the hibernating masses of lady-bugs and marked their nests by blazed trees, by stakes and other means of identification. Now in the middle of winter he comes back, places the half-frozen masses in sacks, and, because of lack of other transportation, is often obliged to carry them on his own back along dangerous trails. He deposits them at a cold storage mountain warehouse, where they are kept in this half-frozen state of suspended animation until they are needed in the spring. But what has this to do with melons?

It is in the Imperial Valley in California that most of the early melons for the eastern market are raised. It is also in this valley that a voracious army of little green insect pests known as aphids abound. They are fond of melons. They eat them, leaf, blossom, stem and all, once given a fair start. It is to kill off this aphid pest that lady-bugs

are gathered. They are sent, under artificial hibernation, to the Imperial Valley. In proper season they are turned loose against the army of aphids. Starved after their long slumber, they do their work of destruction thoroughly. The vines, no longer molested, burst into blossom and to fruit. And you enjoy an early melon at your far-away leisurely breakfast, quite oblivious either of lady-bug or lonely hunter.

Let us turn to still another type of wilderness man. He is the "lookout" in the Forest Service. He constantly scans the ranges through powerful field glasses, on the alert for the faintest wisp of smoke that presages a forest fire. Fierce electrical storms sweep over his little cabin on the mountain top. In the blackness of night he looks for lightning to strike. His only neighbors for six months are squirrels and chipmunks or the occasional inquisitive

visit of some clumsy brown bear. At high altitudes he lives alone, protecting the watersheds of your country, that your valleys may be well watered and fertile and the lumber supply preserved.

And, again, there is the Timber Cruiser, the "land-looker" who wanders vast stretches of forest as the mariner cruises the sea. Sometimes, like the mariner, he carries a compass. Many are old and grizzled woodsmen. The myriad murmuring life of the ocean of timber is their domain.

The newer generation of timber cruisers are trained in different methods, but none scoff at the old "land-looker." He has a sixth sense. He is uncanny. He can find his way alone through the thickest growth. He sees old boundary lines and corner posts where a younger man sees nothing. He toils to estimate timber reaches and find the number of posts, railroad ties, telegraph poles, and even the amount of cord wood, in a given section. He ferrets out old surveys by cutting the new wood down to the old "blaze" of years gone by.

We appreciate the Pullmans that run over the ties he has counted. We send messages over wires strung on poles he has estimated. But his indefatigable quest and calculation do not reach our consciousness.

Yet life is not entirely made up of food and shelter, of lamb chops, melons and railroads. Beauty is to many of us as much of a necessity as food. Yet even the marvelous blooms in our florist shops have been paid for, before we bought them, by the intrepidity of lonely search.

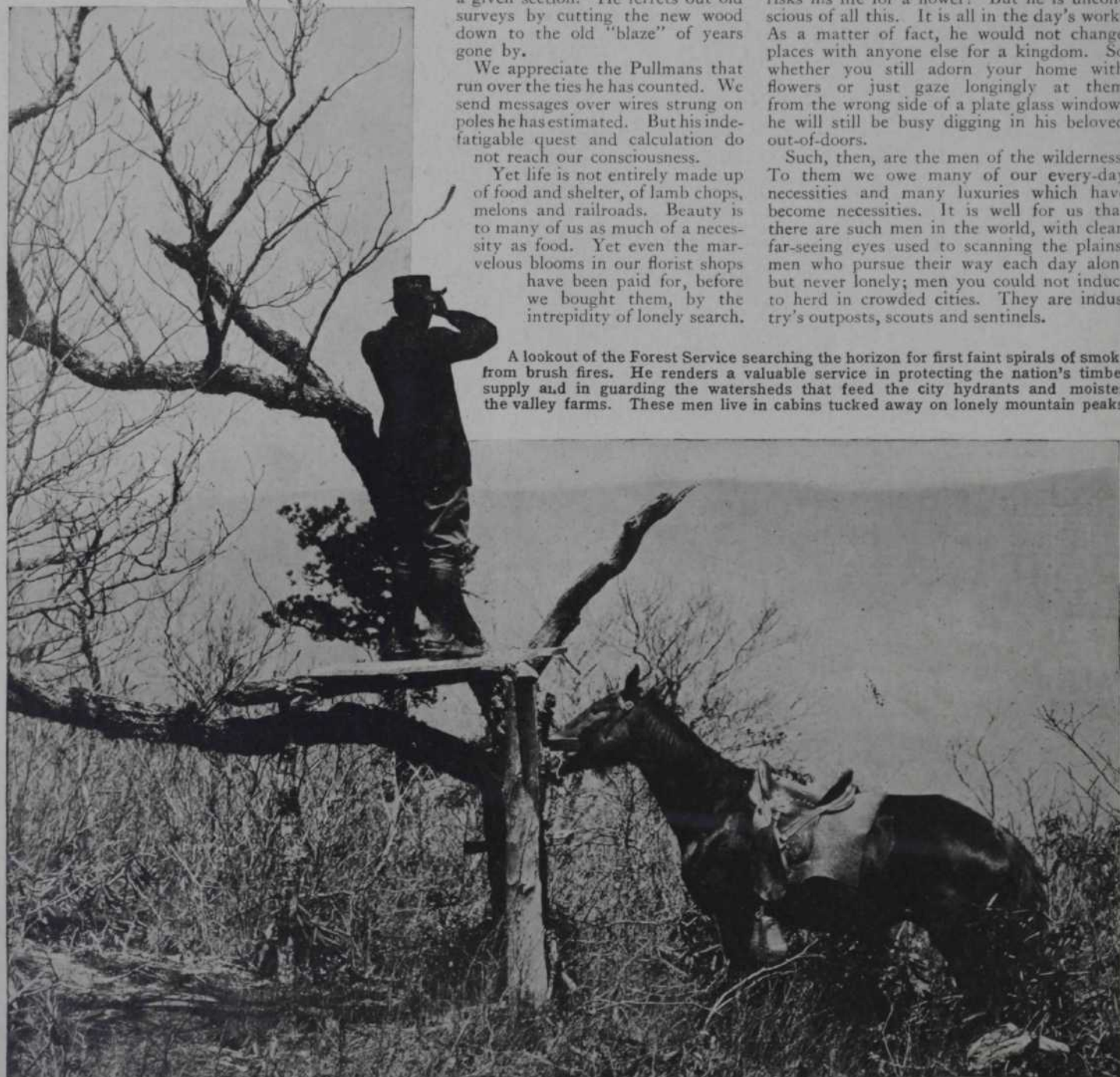
At certain seasons, far from civilization, you may blunder upon a browsing pack animal picketed near a small mountain camp. A short way off is a bent old man on his knees digging, searching in the rich leaf mould of the mountain soil. He is gathering the native forebear of the aristocratic lily that may eventually brighten your apartment. From May until Christmas this odd old man and his pack animal scour the woods in search of the bulbs and roots of rare native blooms.

Risking Life for a Flower

YOU are but one of the many who reap the joy of them. There are people in Australia, in England, in India and China who will enjoy the fruits of this labor. For these seven months he goes his way alone, with but short stops at settlements for provisions. He climbs down into steep mountain gorges, braves summer storms, fords thundering streams. There are moments in which he risks his life for a flower! But he is unconscious of all this. It is all in the day's work. As a matter of fact, he would not change places with anyone else for a kingdom. So whether you still adorn your home with flowers or just gaze longingly at them from the wrong side of a plate glass window, he will still be busy digging in his beloved out-of-doors.

Such, then, are the men of the wilderness. To them we owe many of our every-day necessities and many luxuries which have become necessities. It is well for us that there are such men in the world, with clear, far-seeing eyes used to scanning the plains; men who pursue their way each day alone but never lonely; men who could not induce to herd in crowded cities. They are industry's outposts, scouts and sentinels.

A lookout of the Forest Service searching the horizon for first faint spirals of smoke from brush fires. He renders a valuable service in protecting the nation's timber supply and in guarding the watersheds that feed the city hydrants and moisten the valley farms. These men live in cabins tucked away on lonely mountain peaks.





Good Light Stops Waste

THE ease with which a workman sees his tools and materials determines in great part the quality of his work as well as its quantity. Every plant manager who understands this tries to have enough light so that the workman is not handicapped. The new idea however goes much further. It has been found that every increase in illumination results in greater production and more accuracy. *The profitable limit in lighting has not been discovered.*

IVANHOE will gladly put you in touch with a man in your vicinity who understands the new idea in lighting and can work with you to secure a satisfactory result.

IVANHOE-REGENT WORKS of General Electric Co.
Cleveland, Ohio

"Ivanhoe" Steel Reflectors, Lighting Glassware, Anderson Self-Adjusting Arms, and Illuminating Service.

"Service to Lamps"

IVANHOE

SHADES-REFLECTORS



A Human Production Accelerator!

We are an organization built upon most practical lines and upon common principles—functioning in such a manner that the regularity of your plant is not altered, nor are radical changes made in your policy.

Our efforts are directed toward the viewpoints of your workers—we learn what they think and why they act *destructively*; then we change those viewpoints into proper productive channels. They learn the truth about fundamental industrial economics and *play the game with you*.

Through *rubbing elbows*, by word of mouth, we further “understanding.” We simply answer questions at the right time and in the right place.

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The Drive against Drudgery

Country women do not slave at scrubbing floors and the like because they enjoy it; labor-saving devices for the kitchen are working a profound change and lessening the abandoned farms

By ARCHER WALL DOUGLAS

ONE of the interesting phases of every great business is to note the meaning and import of apparently little things. You find that food choppers have seemingly displaced the use of mincing knives and wood bowls in household use if you are to judge by the diminished sales of these latter articles. So, if you have any analysis, coupled with a little vision, there rises before you the moving picture of the profound transformation going on in the home, especially as affecting that all-important creature to the household and to the human race—the female of the species.

Suppose you start in by asking yourself some elemental questions, such as, "Who uses wood bowls and mincing knives, and under what circumstances?" Then there dawns upon you the great fact that labor-saving devices have other places and purposes than on farms and in manufacturing plants. Also that women do not like household drudgery, and only do it because they have to. Which is rather disconcerting considering that we have all been raised on poetry and literature, always written by man, telling of the delight taken by women in scrubbing kitchen floors that they thereby may contract housemaid's knee.

Now, of course, we may get off that old stuff about the fountains of the great deep being broken up, and the floodgates of society opened wide. Also we may realize that the innumerable labor-saving inventions in household things are doing much to save the servant problem, and are giving woman a chance and opportunity to read other literature in addition to the cook book and the Bible. Likewise, that the man who invented electric washing machines ought to be canonized. For out of these labor-saving devices of the household has come woman's opportunity to do something besides marketing and shopping.

The Way to Keep 'Em on the Farm

MOREOVER, these little kitchen conveniences may help to bring out in household affairs more of its inherent fine art by robbing it of much drudgery. So, too, when you learn that the sale of electric devices and fixtures and bath appliances is largely increasing in the rural districts, and that farmers are buying automobiles as never before, you have opened up a vista of economic possibilities as broad as all outdoors. For the trouble about keeping young people on the farm has always been its loneliness, its drudgery, and its lack of creature comforts.

Once upon a time the Department of Agriculture wrote some 50,000 farm women and asked them what the department could do to make their lots easier and happier, and from the answers which poured in it was evident that the department had taken in too much territory and that only Providence could tackle the job with any hope of success. For it was the tragic and pathetic story of ceaseless drudgery, with inadequate household effects, when they were not entirely wanting, of work from morn till noon, from noon till dewy eve, and no leisure, save on Sundays, when all their neighbors called on them and

stayed through the afternoon and then to supper besides.

Kitchen sinks were luxuries to many, and washing machines only helped out blue Mondays until the electric washer came on the scene. It was small wonder that anybody stayed on the farm when she could help it. The tragedy and pathos of those letters were beyond the telling. Then we had all sorts of solutions of "Back to the Farm" from people living in the cities, and it was all mere theatrical bunk and got nowhere.

A Bath Every Day!

THEN bathtub fixings, and electrical devices and automobile sundries began selling because the farm had running water, and real bathtubs, and electricity that ran washing machines, and cut silage, and sawed wood, and furnished good light so that women folks did not have to clean and fill smelly coal oil lamps. And there were telephones which the women could use and gratify that desire most dear to them, "some body to talk to." Also there were automobiles which took them to the county seat, where there were movies, chautauqua events, maybe an "opera house" often with traveling troupes and sometimes really great musicians. And church sociables and stores with beautiful clothes, such as you buy in the great cities, and then you could go home to your own comfortable farm home and be greatly content to stay there, and not be anxious, as in the past, to sell your farm and move to town where you could have some social life and some comforts and some blessed leisure. For the economic question of staying on the farm was at the bottom a social and very human one. And the great problem of the nation, keeping men (which also meant keeping women) there, met no solution nor could all the king's horses and all the king's men retain humanity on a lonely farm until the inventor of comforts and conveniences came along and found the answer.

Not so long ago I attended a meeting of the Southeast Missouri Commercial Clubs, and along with the men delegates from the various commercial clubs in the nearby towns were women from the women's clubs.

It was worth while to hear these women talk. They always had something to say and said it easily and simply so that every one could understand, and then when they had finished what they had to say they sat down. Now all this was most bewildering to a good many men there to whom a speech in public was a distinct adventure and excursion into oratory, and not a strictly business performance to be concluded as soon as the main purpose was accomplished. Consequently there were very few men who wanted to talk after the women had their say, for they dreaded the invidious comparison.

It seems that the women had an elemental idea that the best possible advertisement and reputation for a town consisted in its being cleanly, attractive and sanitary, and consequently a very livable place. So, as they phrased it, when they grew tired of hearing the men talk about reforms and not get any-

where, they went in a body to the town hall, and illustrated one of those primal things for which women were apparently created; that of telling men unpleasant truths that they may profit thereby. Also, the city fathers listened and took heed, for they were husbands, and the women were potential voters.

So it came about that the public school houses were kept clean and tidy and were fit meeting places for community gatherings, for young people's week-end dances, and for social and economic purposes of all descriptions.

In one town the woman's club planted flowers in the grass plot at the railroad station and paid a gardener always to keep it in shape, so that every passenger on every train remarked on the attractiveness of that station. In another town the woman's club got behind one of those "Clean Up and Paint Up" campaigns, which are the cause of resurrection of many a town. In still another town the woman's club kept tab on the retail stores as to the manner in which they treated their employes as to hours, comforts and sanitary conveniences. And it was a cold day for any retailer when he failed to get on the women's "White List" of those who were worthy of their patronage.

Time for Travel Now

I WAS fortunate enough to meet some of these women when the convention adjourned and to discover what I might have known all along; that a number of them had traveled a good deal, and seen many things, and that all of them had read much and heard much good music. For when any of the symphony orchestras from Minneapolis, or Chicago, or Saint Louis came to Cape Girardeau or Poplar Bluff they attended en masse, besides making numerous trips to Saint Louis for amusement and shopping sake.

In conversation with the president of one of these women's clubs, man fashion, I essayed some economic shop talk, as to the cost of living being kept up by the extravagant methods of modern housekeeping. As, for instance, the use of telephones in ordering household supplies and having them delivered instead of the housekeeper going to the store, selecting what she wanted, and carrying it home with her. Then I got what was coming to me.

I was told that there was nothing in that old stuff. (Not in those words, but in more ladylike phrase. But that was what was meant.) Did I know any male head of the household who would tote a heavy basket of food from the grocery in order to save a few cents? Was it economy of human beings to use old-fashioned flatirons and wear yourself out with brooms when electric irons and electric carpet cleaners saved useless toil?

What were telephones and automobiles and other labor- and time-saving inventions for, except that there might be some surcease from drudgery, and some time for things worth while? Would it not be well for those theorists who knew statistics but very little of human nature to realize that much of the unrest and dissatisfaction of the day was due to centuries of repressed desire for something

more than ceaseless toil and for at least a taste of those things which gave life some zest? Women, in especial, were as weary of preachment about the simplicity and domesticity of their grandmothers as was Jehovah of old of the new moons, and gatherings and feasts of the Israelites.

Was civilization to be reckoned by deposits in savings banks, that flesh and blood might still be so cheap? Or must we adjust our antiquated conceptions to the thought that the real future lay in the increasing welfare of the multitudinous many rather than in a greatly decreased cost of living. That the human side of the equation was more vitally concerned in the greater purchasing power of the masses than in undue cheapening of the prices of commodities. Had not woman throughout the country districts justified her opportunities by the sane, wholesome, human and constructive manner in which she had used them?

I was speechless.

A few months later I attended a great farmers' convention in the little city of Columbia, which is the home of the University of Missouri. The concluding night of the convention there was a large gathering of farmers and their families at an old-fashioned country dinner given by the University. It was cooked and served by the young girls—co-eds—of the School of Domestic Economy of the Agricultural College of the University. Many of them were farmers' daughters and they were carrying back to the farm a knowledge of cooking, of household economies, and of sanitation, such as their overworked mothers had never had time nor leisure to attain.

Of the same breed and stripe were the boy students of the Agricultural College—"Short-horn and Longhorn Aggies"—in whose trained and intelligent hands and brains lay the future of scientific and business-like farming.

At my table there were women workers of the Extension Division of the Agricultural College, who carried the story of the university to those of their sex who could not hear it told in the lecture halls of the university. So I had at first hand the recital of the human and unvarnished side of farm life, of the hungering and thirsting of girls and women for the things that the more fortunate of their sex possess, of the eagerness with which they grasped the elements of cooking with taste and intelligence, of making clothes that had style and appearance as well as wear, of their overweening delight at kitchen sinks and kitchen pumps that banished the everlasting "toting" of water, of the patient and laborious saving of pin money from chickens and eggs to buy an oil cook stove in monthly payments.

The story was none too long before it was interrupted by the dreary speeches, by state officials and by others who hoped to be state officials some day. As one of the Aggies said to me with the elementary directness and insight of the undergraduate, "Our fathers

and circumstances that the purchaser would be misled into believing them to be pure.

Intentional appropriation or converting to one's own use of raw materials of competitors.

Bribery of buyers or other employees of customers, with money, valuable presents, etc., to secure new customers or induce continuation of patronage.

The payment of bonuses by manufacturers to the salesmen of jobbers and retailers, with or without the knowledge of their employers, to procure their special services to push the goods of the manufacturer, has likewise been condemned.

Procuring the business or trade secrets of competitors by espionage on their plants, by bribing their employees, or by similar means.

Procuring breach of competitors contracts for the sale of commodities, by misrepresentation or by other means.

Enticing away of valuable employees of competitors in such numbers as to disorganize, hamper or embarrass them in business.

Making of false or disparaging statements respecting competitor's products, his business, financial credit, etc.

False or misleading advertising.

Widespread threats to the trade of suits of patent infringement for selling or using alleged infringing products of competitors, such threats not being made in good faith, but for the purpose of intimidating the trade.

Tampering with and misadjusting the machines sold by competitors for the purpose of discrediting them with purchasers.

Trade boycotts or combinations of traders to prevent certain wholesale or retail dealers or certain classes of such dealers from procuring goods through the usual channels.

Passing off of the products of one manufacturer for those of another by imitation of product, dress of goods, or by simulation of advertising or of corporate or trade names.

Misrepresenting the materials of which competitors products are composed, and the financial standing of competitors; preventing competitors from procuring advertising space in newspapers or periodicals by misrepresentation respecting their financial standing or other misrepresentation calculated to prejudice the advertising medium against them.

Misrepresentation in the sale of the stock of corporations.

Sale of rebuilt articles of various descriptions, for example: Rebuilt automobile tires, and of old motion picture films slightly changed and renamed—as and for new products.

Harassing competitors by fake requests for estimates on bills of goods, for catalogs, etc.

Giving away of goods in large quantities to hamper and embarrass small competitors.

Sales of goods at or below cost to accomplish the same result.

Sales of goods at or below cost, as "leaders," coupled with statements misleading the public into the belief that they were sold at a profit by reason of the seller's superior facilities.

Bidding up the prices of raw materials to a point where the business is unprofitable for the purpose of driving out financially weaker competitors.



If the tractor, why not the washing machine?

used to call that oratory, we call it bunk."

Then it was announced that a woman would be the last speaker. She had a gentle voice that carried to the utmost parts of the hall. Education was the subject of her story. The story of a lifetime in the rural districts where for all time her work will be remembered. The tale of one-room school houses without the commonest conveniences and comforts; of children walking miles to and from the school, uncomplaining, in mud, snow, dust and rain; of the tragedy and pathos of childhood, starving mentally and spiritually for lack of sustenance that so easily might have been theirs, save for a state-wide lack of knowledge of local injustice in education.

Every one was listening now: "Oh you men, is your thought only for prize cattle and great yields per acre of corn and wheat? What are the real products of your state? Are they not the boys and girls, the future citizens, the hope of our country, the objects that should have your utmost thought and care?"

The audience came to its feet cheering for the woman whose human appeal had gone straight to their hearts.

All's Not Fair in Trade

UNFAIR PRACTICES in competition include, according to a member of the Federal Trade Commission:

Misbranding of articles as regards the materials or ingredients of which they are composed, their quality or their origin or source.

Adulteration of various products, misrepresenting them as pure or selling them under such names



STEEL SERVICE

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and manufacturers. We develop new products for manufacture. We investigate new enterprises and new inventions to determine their investment worth and their opportunities for success. We prepare complete reorganization plans for industries contemplating reorganization.

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The Nation's Business Observatory

The vexed question of industrial relations uppermost in the minds of the trade press—
Cancellations a trade evil to be remedied—New laws and dead bills

FOUR THINGS that have engaged the attention of industrial America in the last month are: the problem of labor, the questions of cancellations that followed the spring wave of price cutting, the threatened shortage of coal and the sins of omission and commission of Congress in its handling of legislation that directly concerned business.

There is growing evidence of a willingness to face squarely the question of the open and the closed shop and an increased

willingness to say "no" to arbitrary demands.

The flood of cancelled orders that moved back from retailer to jobber, to manufacturer led to prompt action by several trade organizations to settle once for all this vexed question of business ethics.

From all lines of work there goes up still the prayer to Washington: "Let us alone." Too much legislation, too many bureaus, too many reports and questionnaires is the complaint.

Business Begins to Balk at the Demands of Labor

HERE are two quotations from daily newspapers of wide circulation which show how keen is the public interest in the problems of labor:

The New York Times: We are in full career toward a thing unknown and abhorrent to American institutions—the submerging of individual liberties in class warfare. The spirit that has so often misled the American workman is tempting him once again, and at a time when the whole fabric of industry is in danger.

B. C. Forbes in *The Public Ledger:* Those of us who are neither union members nor capitalists, now feel that labor aspires to act the part of the upperdog, with us, the public, as the underdogs. And we have no intention of submitting to autocratic dictation from labor any more than we were content to submit indefinitely to dictation by "soulless corporations" or buccaneer capitalists.

The Manufacturer's Record quotes with approval the words of Gov. John M. Parker, of Louisiana, who told the union men who served on a public works job:

I would be unfit to be an American with the American blood flowing in my veins unless I stood for what I believed, and you know I am right. Every American has a right to stand for what he believes. If you don't want to work, I appeal to you, don't get in the way of Americans who do want to work and who are willing to work as Americans.

The *Record* has no hesitation in placing the blame for whatever troubles we may have had or may be facing:

The fight ahead is one upon which hangs the life of America. It is a fight as to whether radical labor leaders enforcing their socialistic propaganda shall destroy the independence of the people of this country and carry the nation down to destruction, or whether all the people who are opposed to Socialism and Bolshevism and Gompersism shall stand for the right, regardless of what it may cost them in sacrifice of old-time party associations.

Successful Farming, published by E. T. Meredith, Secretary of Agriculture, says:

Organized labor is on trial right now before the bar of public opinion. It must show a greater willingness to turn the slogan around so as to read: "An honest day's work for an honest day's pay." It must show more interest in the rights of the public—in majority rule. All this leads us to believe that organized farmers are going to be critically judged by the same public opinion. The demand for collective bargaining must show a clean purpose. Minorities must have their rights but must not rule tyrannically because of their peculiar power through organization.

Two views of farming papers are interesting. The *Agricultural Review*, the organ of the International Farm Congress says:

While organized labor is making its supreme effort to capture the Government by defeating all candidates not pledged to its interests, the move-

ment in favor of the open shop is gaining headway in many sections. These and other indications may point to the opening of the great battle for industrial control—or industrial freedom—which careful observers have for several years considered inevitable.

The duration of this battle is doubtful, but its outcome is not. The unions are fighting for two principles that cannot be maintained. The first of these is the exercise of authority without the assumption of corresponding liability or responsibility. The second is the restriction of output by discouraging individual initiative and penalizing individual effort, and by unreasonable and unnecessary reductions of working hours.

The *Price Current Grain Reporter* cites railroad labor to the bar of public opinion accusing it of "meditated and prearranged malingerings" adding:

It seems indeed to be the deliberate purpose of the men to make decent service and a profit impossible, with the object of forcing the roads into bankruptcy and into the hands of the Government and their own management to complete the ruin; and the economically idiotic Farmers' National Council is doing its part to force this same ruin on the country by seconding the Plumb brigand demand for such ownership and operation.

The *American Metal Market* is unsparing in its criticism of the unions:

The function of a labor union should be to furnish good service, not to exact high prices for poor service. Union labor should mean skillful and efficient work.

Instead, unionism is made a thing to be shunned by employers. It means constant carping, strikes on this subterfuge and that, and the minimum of performance the men can get away with, through belonging to a union that will make trouble if the employer objects to anything.

In the long run "pay must spell production," is the lesson drawn by the *American Lumberman*, which quotes John J. Mitchell, the Chicago banker, as saying:

This is the first time in five years when there has existed a situation in this country where a workman thrown out of employment could not readily get another job, usually at higher wages.

The same publication, after quoting recent instances of factory shutdowns, adds:

All this portends, in the judgment of the *AMERICAN LUMBERMAN*, neither a "panic" nor a period of serious industrial depression; but it does mean, unless all signs fail, that the era of little work and big pay, with its accompanying orgy of reckless spending, is rapidly drawing to a close; that the process of deflation which everyone knew must come sooner or later is being accomplished without serious jar to the economic structure; that labor conditions are becoming more stabilized, and that workers are beginning to realize that, in the long run, pay must spell production.

The same point of view is taken by the *Paint, Oil and Drug Review*, which says:

Labor, meaning human power and human need has the sympathy of all mankind. organized "labor

boss" power on the other hand is thoroughly unpopular in this country and the impudent interference of labor bosses with the rights of the general public has been strongly resented already and will tend to peaceful legislation like the Kansas anti-strike law.

Conditions in the textile industries move the *Dry Goods Economist* to say:

What between the dead spring season for ready-to-wear, charges of profiteering, cancellations and demands by labor for higher wages, the woolen industry just now feels about ready to shut up shop. The Amalgamated Textile Workers, who seem to be especially strong in Passaic, are making a modest demand for a 50 per cent wage increase.

As a result of all these discouraging factors the mills in Passaic and elsewhere are suspending work to an increasing extent in the hope that a period of idleness will make labor more modest and willing to work—will help the present downward tendency of raw wool and will stimulate demand for goods.

A more hopeful note is sounded by *The Bulletin*, of the Associated General Contractors of America, which says:

Signs of a healthier feeling among the laboring men and mechanics of the building trades begin to appear.

A higher efficiency per man is noticed in several localities.

In the city of Cleveland, the presence of some unemployed men on the scene of each piece of construction has had a sobering effect on the men at work. Elsewhere the settlement of wage demands by the adoption of agreements for the coming year at higher rates has quieted for the moment the discontent that has recently been so pronounced among all large groups of workmen. In as many other localities, agreements have not been made, usually for the reason that the contractors and employers' associations have declined to accede to union wage demands. The cities of Detroit, Denver, Milwaukee, and Chattanooga, have in the last month taken a stand for the open shop.

Coal Shortage Cry Raised; No Danger, Says One Expert

AN APPARENT coal shortage in some parts of the country, with prospects of a limited supply of coal next winter, are not encouraging to manufacturers who are making efforts to increase production. A sharp controversy has arisen as to whether there is an actual shortage and as to the measures of relief necessary if there is one.

The United States Geological Survey announces that in the first 146 working days of the year the mines dug 241,291,000 tons of bituminous coal as against 201,170,000 for the same period last year. Nothing is said as to consumption, but the statement is made that the survey will make a rapid census of coal stocks to get an accurate idea of the amount now in the hands of consumers.

A shortage amounting to a grave crisis is pictured by the National Coal Association, composed of operators, which blames the

situation on the inability of the mines to obtain cars. In an official statement printed in many business papers it says:

Inability of operators of bituminous mines to obtain an adequate supply of cars has resulted in a grave crisis involving the industrial life of the country. Not only is the situation extremely critical in the east and middle west, but disaster threatens industries in the entire northwest. To supply coal to the northwest for next winter about 30,000,000 tons of bituminous coal must be shipped up the Great Lakes while navigation is open.

The facts as stated, the association says in a later statement, were recognized by the Interstate Commerce Commission in its order giving preference to coal mines in the distribution of open top cars.

An exactly opposite view to that expressed by the coal association is held by George H. Cushing, managing director of the Wholesale Coal Association. As quoted in the *Coal Age* he says:

I know what is being said on the other side of the question. I do not believe it. The fact is, we have a demand which, if spread in equal monthly proportions over the year, would call for a production of 10,300,000 tons a week. The fact that for nine weeks we have been getting a weekly average production of only 8,946,700 indicates we are accumulating a weekly shortage of 1,353,000 tons. That would be bad if it were to continue until the end of the year.

We have always fallen below our present level of production in summer (in peace times) and then made up the shortage, or seeming shortage, in the fall months. That is what we did last year. We are going to have less of a shortage to make up this fall than last for the reason that we are moving 3,700,000 more coal to market a month than we did a year ago.

Industrially, consumers are in a bad way, according to the *Coal Trade Journal*, which declares that:

Many consumers are on the ragged edge of being entirely without fuel. This is particularly true of New England and the middle Atlantic states. Conditions in the middle and far west are much the same.

Of proposals that an embargo be placed on exports to ease the domestic situation, this paper says:

The fault is not with the export trade. A flat embargo on exports will not add one pound to production and it is extremely doubtful if it would in itself reduce prices one nickel. It is the transportation breakdown that is responsible for the present scarcity of coal supplies.

Propaganda is suggested by the *Iron Age* as at work to place the blame for high prices and scarcity on exports. It quotes export statistics to show that exports are only normal and adds this as its contribution to the general situation:

To the coal mine and railroad labor wars are largely due the fuel situation which faces not only the average householder but practically all industry.

Efforts of the Interstate Commerce Commission to give relief to New England through preferential shipments draw this comment from the *Coal Trade Journal*:

Desperate communities, like desperate individuals, are not always nice in their weapons of offense and defense. Knowing that southern coal had been flowing overseas in increasing volume New England raised a great hue and cry that she was being sacrificed to the rapacity of export shippers. Pressure has been applied and Order No. 6 of the Interstate Commerce Commission . . . reestablishes for New England trade and for coastwise coal traffic generally the same scheme of priority and preference that was the bane of government distribution of coal from August, 1917, to April, 1918.

The *Manufacturers Record* takes exception to the order of the Interstate Commerce Commission giving preference in the distribution of open railroad cars to the coal industry, and says:

The immediate effect was to divert virtually all open top cars to the transportation of coal and leave every other industry which requires such cars utterly destitute of transportation facilities.

Shipping Board's Ruling Hard Blow to Flour Trade

The milling industry resents bitterly the decision of the Shipping Board which *The Modern Miller* says: "retains in effect a 25c per 100 pounds differential in favor of wheat which will remain in force and effect until the steamship interests desire to make a change. The paper adds:

It stands as a killing blight to flour trade just as the new winter wheat crop is ready to move, crushing the hopes of an early export trade in flour.

"Cancelitis" a Problem in Textiles and Leather

FOLLOWING the price-cutting mania, various lines of industry have been going through what the *Textile World Journal* describes as "acute cancelitis." The trades involved were chiefly those having to do with wearing apparel. In several lines of industry hurried meetings were called to consider means of checking the movement. Two suggestions were for a uniform sales contract and an unfair list of buyers who cancel. The blame is not wholly with the buyer, says the *Journal*, which adds:

It is admitted that there have been those, not only this season, but for years, who have accepted more orders than they had any idea of filling on the basis that a certain proportion of these orders would be cancelled. This is admission *per se* that an order is not an order in the woolen trade and that its acceptance by the buyer depends upon market conditions.

The man who can have the deciding say as to the fulfilment of contracts on the part of the seller is the manufacturer. His instructions as to how his goods are to be sold must of necessity be lived up to on the part of selling agents. The manufacturer has it in his own hands to correct conditions and although he may be obliged to go through a period of disagreeable conditions, yet, for another season, the situation can be changed, if he so wills it.

Less serious is the situation in the cotton field, according to the same authority:

In the cotton-goods field the situation appears less serious than in any other division of the textile industry. Generally speaking, cotton goods manufacturers have benefited by the swing away from the high-priced luxury goods comprised in the wool and silk divisions of the trade. But the statistical position in cotton does not give warrant for the belief that demoralization, such as is apparent in the other textile divisions, can occur here. In the woolen trade there are leaders who contend that the most salutary method of bringing about a rapid solution of the current problem is for mills to curtail radically, if not to shut down altogether.

In the silk trade, the organization of a Bureau on Contracts is reported by the *Cloak and Suit Review*, which thus explains its purposes:

The leading manufacturers and dealers in silks have felt the need for taking measures to meet the conditions which have resulted from the rapid fluctuations in the market price of silk. Cancellations, it was pointed out, have usually arisen from the fact that buyers under contract calling for future deliveries, who have scrupulously adhered to their obligations, have suffered in comparison with such of their competitors as may have resorted to proper or improper methods in obtaining rebates or total or partial cancellations.

The clothing trades seem the most affected. Of one branch *Men's Wear* says:

Cancellations of spring neckwear have become so heavy that they are the source of grave concern to manufacturers, some of whom threaten to use every means in their power to make these orders stick. While some manufacturers complain of cancellations of spring orders by retailers and declare that where the piece goods have been cut and put in work cancellation is being refused, in turn certain manufacturers have cancelled orders for tie silks for fall, causing the National Association of the Silk Manufacturers to issue a bulletin to the effect that cancellations would be refused.

The *Dry Goods Economist*, which reports a lessening of cancellation, makes this report of the attitude of one manufacturers' association:

Another manufacturers' association has taken steps to end the cancellation evil. The United Waist League of America has adopted a resolution condemning the cancelling of orders as unethical and unjust. It is stated that when orders are cancelled there is a presumption on the retailer's part that only one party to the original transaction, the manufacturer, can be held to his agreement. The law will be invoked, where necessary, to protect the manufacturers' interests.

How serious the situation was in the woolen trade is shown by this extract from *Men's Wear*:

It would be interesting to know the exact amount of business which has been off the books through cancellations, for it is certain that it easily may run up into scores of millions of dollars. One concern in the industry, by no means the largest—in fact there are a score or more that are larger—admits having received cancellations for \$4,000,000 worth of merchandise or approximately half the business taken. Under the circumstances, it is not surprising that those who are working for the general welfare of the industry encounter a great deal of dissatisfaction with anything that is done to stay the decline or to compromise its severity.

Publicity was advocated also in the knit-goods trade. The action of the Pennsylvania hosiery and underwear manufacturers is thus reported by the *Knit Goods Bulletin*:

A list of merchants, who had submitted cancellations was read, and a resolution was adopted to the effect that a copy of the list and additions thereto be sent to any member requesting it, with the understanding that such members report to the organization cancellations received by them. In this way, it is expected, there will be made available for future reference the names of many merchants who repudiate their obligations in a declining market.

The *Shoe and Leather Reporter* says that the condition in its industry is not as bad as it is painted. Editorially it adds:

On the one hand retail shoe stores are crowded with buyers and surplus stocks are rapidly going into consumption and on the other shoe manufacturing and tanning are being severely curtailed.

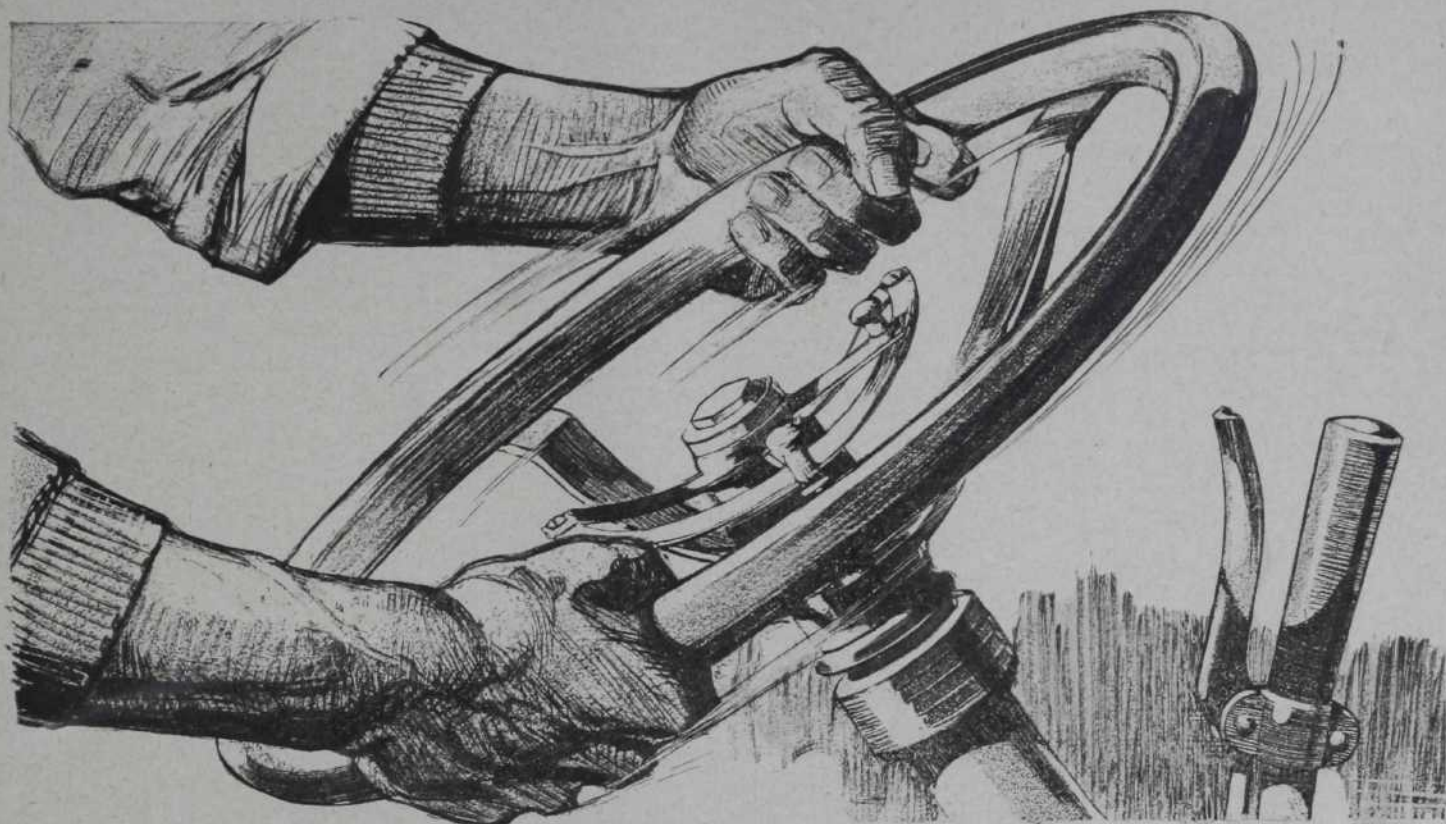
With consumption greatly stimulated and production severely restricted the inevitable result will be the absorption of stocks and a healthy and to some extent rising market under the operation of the law of supply and demand. The speculators are being driven out of the business.

Hide and Leather says:

No improvement is seen in the boot and shoe trade. Manufacturers are waiting for something to develop. The return of shoes on cancelled orders has been a severe blow. Many of the small concerns who were obliged to secure outside capital are feeling the situation keenly.

The *Manufacturing Jeweler* takes up the cudgels for its side of the trade:

The practice of cancellations, accepted by many manufacturers as without redress, has a baleful influence on the business morals of jewelers. If written orders can be lightly cancelled by wholesalers, some manufacturers, especially the younger



TIMKEN

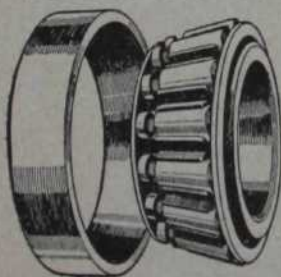
TAPERED ROLLER BEARINGS

Twist!

Some job to steer a loaded "five-tonner" over rough pavements and country roads! The constant twist, jerk, and strain on muscles give you a feeble idea of the heavy toll taken from knuckle head and front axle bearings.

The continuous shift from radial to thrust load, from thrust to radial—every combination of the two—is successfully withstood by the tapered principle of Timken Tapered Roller Bearings. And easy take-up wipes out wear, if it ever occurs.

At Points of Hard Service



Timken Tapered Roller Bearings are used in the great majority of motor vehicles at points of hard service:

Transmission Pinion Shaft
Front Wheels Differential
Rear Wheels Steering Knuckle
Rear Axle Gears—Worm Gear,
Internal Gear, Bevel, and Double
Reduction.

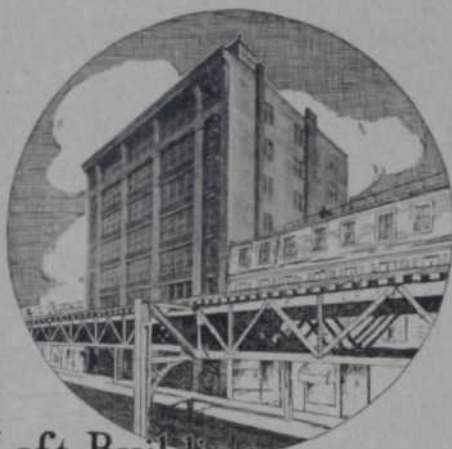
This leadership is established on the tapered principle of design, quality of manufacture, performance on the road, and service to the automotive industry.

THE TIMKEN ROLLER BEARING COMPANY, Canton, Ohio

Plants manufacturing complete bearings at

Canton, Ohio; Columbus, Ohio; Birmingham, England; Paris, France.
General Offices, Steel, Rolling, and Tube Mills, Canton, Ohio

Timken Tapered Roller Bearings for Passenger Cars, Trucks, Trailers, Tractors,
Farm Implements, Machinery, and Industrial Appliances



Loft Building
ECLIPSE MANUFACTURING COMPANY, BOSTON

Building for Investment

THE insistent demand for space in loft and office buildings assures excellent returns on the investment despite high building costs.

When you realize the safety and permanence of this type of real estate do you say "I'll consider it later?"

No, you start plans at once.

First you consult a firm of architects and engineers of long experience in designing buildings to produce maximum return on capital so invested, whether loft building or office building, factory or warehouse.

MONKS & JOHNSON
ARCHITECTS · ENGINEERS

BOSTON NEW YORK

99 CHAUNCEY STREET 50 EAST 42ND STREET

ones, seem to regard written contracts as of no binding effect, and feel deeply aggrieved if the other parties to the contracts ask to have them carried out.

Store fixture makers naturally felt the reaction. *Men's Wear* reports:]

It is asserted that cancellations for show cases and store fixtures are not numerous, but it is said that the feverish buying which characterized last year is now absent. Manufacturers assert that while business is good, it is not nearly so active as it was, and it is not thought that many firms will be at a loss to know how to take care of its orders from now on.

Sharp Opinions on What Congress Did and Didn't Do

WITH JAPAN as a lesson, the *Textile Colorist* warns the American dye makers that our foreign markets need intensive cultivation. Japan had only a small dye industry prior to the war. "In 1917 nearly 200 dye factories employing about 24,000 workmen were listed in Japan. With the signing of the armistice the industry began to rapidly decline. The latest census lists 87 dye factories with 11,000 employees. The decrease, therefore, means ultimate failure."

Our dye output has grown from \$3,500,000 in 1914 to more than \$70,000,000 in 1919, with a promise for this year of more than \$85,000,000.

India, China and Japan are among our most promising markets. In February of this year we sent \$1,000,000 worth to India as against \$37,000 worth in the same month of 1919.

Of German competition the *Textile Colorist* says:

This (a report of the British Color Users' Association) would seem to indicate that, for a long time to come, our United States dyestuffs exporters have little reason to fear German competition in the world markets.

Other journals are less certain. The defeat of the Longworth bill to protect our coal-tar dye and chemical industry fills them with gloomy forebodings. Says the *Paint, Oil and Drug Review*:

The present congressional inaction certainly gives credence to the rumor that German agents have started in again on their policy of commercial and political turpitude which was responsible for so many dark chapters in pre-war days. We need protection against murderous methods of competition carried on by conscienceless representatives of interests which in years gone by have debauched our buyers and destroyed American industries.

The *Oil, Paint and Drug Reporter* takes a similar stand:

Between now and December, when the Congress meets again, is the American dye maker's opportunity. The public should be informed of the dangers confronting the dye and chemical industries of the United States. Class-patriotism is a menace, while mass patriotism is sound and sincere. If legislation of the requisite sort is not passed soon, the German chemical octopus will once more have free America in the grasp of its tentacles.

The *Textile World Journal* is calmer:

The obituary of the dye bill having been written, and an autopsy having been performed thereon, it may seem as if common decency demands that it be allowed to rest in peace.

Nevertheless, this is an unusual case. Dead though the bill is, it is bound to rise again. Infused with new life, it will once more be made the plaything for congressional discussion. The same old arguments will be produced to establish the fact that the proposed legislation is un-American and dangerous.

While the dye industry resents the failure of the Longworth bill to pass, the jewelry trade rejoices that another threatened piece of



The Keynote

Of our policy is to render our clients intelligent, dependable, efficient banking service—a service covering every financial requirement, a service stretching to every corner of the commercial world.

Capital, Surplus and Profits
\$37,500,000

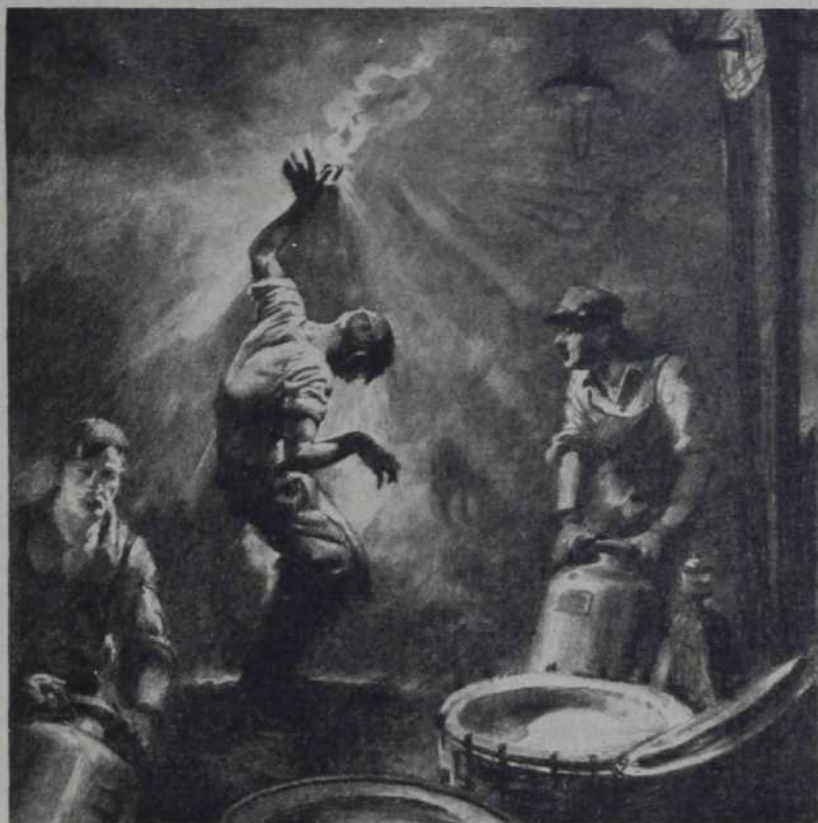
DIES FROM SHOCK

VOORHEES C. MINOR KILLED AS HE TURNS ON SWITCH

Body Taken to Hospital But Death Occurred Almost Instantly From 440 Volts

Voorhees C. Minor, residing at 40 South Jefferson Avenue, was instantly killed at 3:30 o'clock Sunday afternoon when he received 440 volts of electricity while turning a switch at the Milk Producers' Company, 47 Kalanassos Street, where he was employed. Coroner Charles Young was summoned and has called an inquest for Tuesday afternoon.

Mr. Minor was making ice cream and was about to turn on the current when the accident happened. The switch handle had been broken off but employees have been turning it with sticks. Everything contributed to the accident of yesterday. Mr. Minor wore shoes with steel plates on the bottom and was standing in a puddle of water on a wet concrete floor. The switch stuck and he used his hand and received 440 volts, causing him to topple over to the floor. A hole was burned entirely through his right little finger and death is supposed to have resulted instantly from the shock.



It looked so harmless!

He reached for it—touched it—toppled over . . . dead!

IT was an exposed knife switch. The handle was broken. The workman used his hand to turn on the current—thoughtlessly, carelessly. Along his arm and across his heart shot 440 volts. He toppled over—dead.

The innocent-looking, harmless-looking exposed knife switch! All around us—in shops, in factories, in public buildings, in homes—it awaits its careless victims. How long must men die to teach us the deadly menace of it?

All over the land protest is going up

From everywhere an outcry, in ever-increasing intensity, is heard against the needless waste of life and property caused by the exposed knife switch.

Fire marshals are ruling against it; safety officials are branding it as dangerous; labor unions are denouncing it; electrical societies are condemning it; architects and contractors are blacklisting it; from every side comes the demand from authorities—the exposed knife switch must go.

"The loss of life and property due to defective electric installations every year," says John G. Gamber, State Fire Marshal of Illinois, "is beyond reason. . . . My department has issued a general order requiring that all knife switches, other than those on switchboards, must be of the approved safety enclosed type."

The Western Association of Electrical Inspectors, in convention at St. Louis January 27, 28 and 29, 1920, went on record without a dissenting vote as being in favor of the use of enclosed switches.

"The exposed knife switch," says John A. Hoeveler, Electrical Engineer, Industrial Commission of Wisconsin, "is the most common unguarded source of electrical trouble in factories. The worker is always in danger of shocks and burns by contact."

The Square D Safety Switch

The Square D Safety Switch is an absolute safeguard against shock, fire, and industrial accident of any kind.

It is a simple knife switch in a pressed-steel housing—externally operated. A handle on the outside does all the work.

Current cannot reach that handle, nor the box itself—tough, rugged insulation completely isolates all live parts. They are safely enclosed within steel walls.

The switch may be locked in the open position, too, while work is being done on the line; nobody can thoughtlessly turn on the current. This feature is saving many an electrician's life. "On" and "Off" positions are clearly indicated. The Square D Safety Switch is made in over 300 sizes, types, and capacities—

for factories, office buildings and homes.

The greatest remaining hazard around an electrical installation—the exposed knife switch—is going. All over the country progressive firms—leaders both in employees' welfare and in efficient production—are safeguarding the lives of their workmen and their property by replacing all old-style exposed knife switches with Square D Safety Switches. Prominent among them are:

The United States Steel Corporation
Pennsylvania Railroad
Standard Oil Company
Pullman Company
Ford Motor Company
The B. F. Goodrich Rubber Co.
U. S. Shipping Board
General Motors Corporation
Bethlehem Steel Company
The White Company

Listed as standard for both fire and accident prevention by the Underwriters' Laboratories of the National Board of Fire Underwriters. Meets the requirements of the National Electrical Safety Code of the Bureau of Standards, Department of Commerce, Washington, D. C.

The Square D Safety Switch is sold and installed by your electrical dealer and contractor. Architects and engineers are listing it as standard equipment. Ask any of them for further information—or write us direct.

Act NOW and protect your workmen, your family and your property against fire, shocks and other electrical hazards.

SQUARE D COMPANY

1400 Rivard St., Detroit, Mich.

Canadian Branch: Walkerville, Ont.



The dangerous exposed knife switch



The Square D Safety Switch

DURAND STEEL RACKS



Precision and promptness in filling orders is often appreciated as much as quality of product.

Durand Steel Racks and Shelving are adaptable to all kinds of stocks, and instantly adjustable to the sizes of the stocks on hand.

They speed up service, eliminate friction between departments and reduce losses through errors.

Write for catalogue of steel racks, bins, counters, etc.; or for catalog of steel lockers.

DURAND STEEL LOCKER CO.

1511 Ft. Dearborn Bank Bldg.
Chicago

511 Park Row Bldg.
New York

legislation did die. Says *The Manufacturing Jeweler*:

The second session of the Sixty-sixth Congress came to an end without taking action on the McFadden bill which would provide for a bonus to mine operators of ten dollars an ounce on all gold produced in this country and lay a tax of fifty cents a pennyweight on the precious metal used in the arts and trades.

This was a particularly vicious piece of legislation, even aside from the taxation feature, which would bear heavily on the jewelry trade.

The Keystone fears a renewed effort to pass the bill and calls attention to its unfairness:

A comparatively very large proportion of the gold used in the arts is not virgin gold, but consists of metal that has previously been manufactured into jewelry, gold plate, coin, or some other form and then melted down for resale to the jeweler or other industrial craftsman. There would be no way to keep a record that would distinguish between this gold and gold which had been produced from a mine a short time before and was making its first appearance as a manufactured article. In spite of these facts the McFadden bill proposes to tax all articles manufactured of gold, which means that every time this old gold was resold and made over it would pay a tax that would go towards making up a bonus to be awarded the miner for producing new gold.

Bills to permit "collective bargaining" by farmers stir the wrath of the *Price Current Grain Reporter*, which describes the Volstead bill as "cheap political legislation" and goes on:

The charge that the bill is purely political flim-flam, a sop to the economic greed and more to the ignorance of a certain type of swivel chair farmers, is quite justified; and there is reason for the belief that it will defeat its own purposes, because it takes much more than an act of Congress to make any business profitable. At most it can but create in the Agricultural Department another parasitic office of espionage—this time on the slipshod and greedy farmer himself.

Hide and Leather has invited opinion from leather men on the Kreider Bill which calls for monthly statistics of hides, skins and leather. Most of the comment is adverse. Here are some expressions:

Packer Hide Broker: It seems entirely unfair that hides and leather should be singled out for statistics without carrying this into shoes and other manufactured leather goods.

Ohio Hide Dealer: All it will do will be to make more work for those who must file the reports.

Ohio Tanner: If conditions actually warrant our Government in taking hold of investigations of this nature, why should any such laws not operate equally against every class of trade? For instance, this particular bill has been introduced by a large shoe manufacturer. If it is desirable for the shoe manufacturers to report their stocks of leather, why are they not also required to report their stocks of every other commodity, also their finished shoes and unfilled orders?

Chicago Hide Broker: On a guess I should say that there would be at least 100,000 reports to be turned in. The bill reads that "the quantities and classes of hides and skins owned or stored by packers, abattoirs, butchers, etc.," must be reported. It therefore becomes necessary for a butcher with one hide to make a report to the director of census. The bill also reads that dealers are to report and it follows that the country merchants who have bought two muskrat skins must report to the director of census.

Farm Stock and Home, referring to the two bills which proposed to reimburse the farmer for loss caused by government price fixing of wheat in 1917, says:

The trouble seems to be that anything the farmers want is "class legislation"; while legislation asked by other interests is perfectly right and proper.

Right in this connection the Bureau of Markets has announced that excess profits of more than a million dollars, obtained as excess profits by wool

The Time-tested Experience of an Organization

The value of the counsel of an individual in the solution of management's problems is limited by the scope of his personal experience.

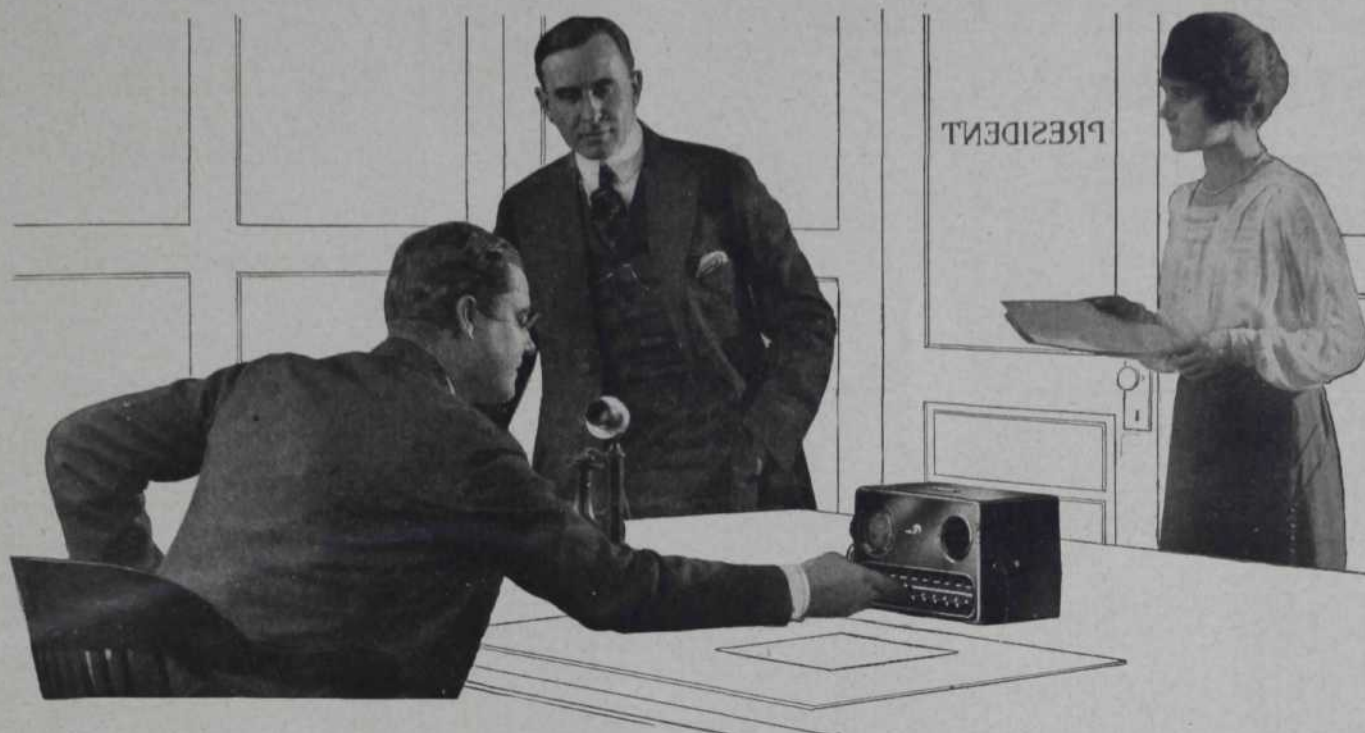
The counsel of a time-tested organization of industrial engineers utilizes not only the resources of its staff but also the accumulated experience of the organization itself.

We offer our clients this combination.

**GRIFFENHAGEN &
ASSOCIATES, LTD.**

INDUSTRIAL ENGINEERS,
ACCOUNTANTS, AND
EMPLOYMENT ADVISORS

116 S. Michigan Avenue CHICAGO



TEAM WORK In the Great Game of Business

WHEN Two or Two Hundred Employees, or Departments, are working in unison for the attainment of the same object they must have both the desire and the facilities for working together.

Mass effort without coordination is waste multiplied.

The DICTOGRAPH System of Interior Telephones

—enables Ten men or One Thousand men to work as One. It provides complete, automatic intercommunication between every executive and important employee. By keeping every unit of the organization in constant touch with every other unit it promotes intelligent coordinated effort and singleness of purpose.

The wonderful Dictograph Master Station enables the managing executives, without leaving their desks, to direct the individual and collective effort of the entire personnel into one single channel of accomplishment, thereby insuring perpetual coordinated effort.

This team work between all units of the organization makes for maximum production at minimum cost.

With the Dictograph there is no switchboard and no operator, and on the Master Station neither earpiece nor mouthpiece is employed. Just press a key and talk, and the voice comes out through the Loud Speaker just as if the person talking from the other end were standing in the room. Connections are instantaneous and automatic.

50,000 Executives in Banks, Offices, Factories, Public Service Corporations, Governmental Departments, etc., etc., use the Dictograph daily. Let us send you a list of users in your own line of business.

For the Busy Executive—A Booklet or Demonstration

An Essay on "Executive Efficiency" showing the relation of the Dictograph to the problem of Executive Control and Coordinated Effort will be mailed

free to every interested business man on request. Thousands of executives have profited by its sound, practical truths. Or, one of our Sales En-

gineers will demonstrate the Dictograph to you on your own desk at your convenience, without obligation—of course.

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Mr. E. McCARTY,
Forge Foreman,
Thirty-eight years of
continuous service.

Superior Craftsmanship Produces Superior Drop-Forgings

THE old-time smith at his anvil was justly proud of his skill—Williams' men take equal pride in theirs. For it is not modern machines alone, powerful and efficient though they be, but true craftsmanship that is responsible for the quality of Williams' Superior Drop-Forgings and Drop-Forged Tools.

And this highly developed, technical skill is not acquired in a day—it is not a mushroom growth. Though serving an apprenticeship of years before he is considered to have developed the required standard of expertness as a drop-forging, a craftsman who has worked in Williams' plant for fifteen years is considered a youngster to many there with records of thirty-five years' continuous service.

The personal pride of achievement is theirs, for theirs is the skill in every department—the skill that for nearly half a century has maintained the high standard established for Williams' product.

J. H. Williams & Co.
BROOKLYN BUFFALO CHICAGO



WILLIAMS' SUPERIOR
Drop-Forged Clamps
for every purpose

Our new Machinists' Book Sent
on request

dealers during our war period, will be collected and returned to the growers.

Here is a strong precedent for paying the wheat growers back!

Trade Papers Repeat the Plea for a "Let Alone" Policy

"Let us alone," cries business.

Things are coming to such a point (says the *Southern Lumberman*) that the man who is trying to eke out an existence, and at the same time produce a necessary commodity by running a sawmill, is kept so busy filling out questionnaires, filing income-tax reports, attending committee meetings, etc., that he has little time left to be devoted to the manufacture of lumber. Where is this thing going to stop? When is the sawmill operator going to be permitted to saw wood and sell it to the best possible advantage, without the necessity for employing a corps of expert accountants and statisticians to gather information demanded by some prying bureaucrat?

And the *Price Current Grain Reporter* agrees:

The time has now come, whether the country be technically at war or wholly at peace, that government control over business shall cease, and that the grain trade as such (to come to particulars) shall be allowed to function as formerly like other commercial agencies and perform its duties to the producer and to the consumer without the intermeddling of any government bureau, commission or department save for the enforcement of proper laws against fraud and deception and to enforce the fulfillment of legal contracts. This is the proper function of government; beyond that, so far as business and industry is concerned, it must inevitably work injustice.

The proposal for the appointment of a federal coal commissioner stirred the *Knit Goods Bulletin* to say:

Business prospered before government by commission was undertaken and will prosper again if the commissions be called off and business men be permitted to manage their affairs in a business way so long as they conform to the law of reason and the law of the land.

Shoe Trade Is Looking Europeward for Relief

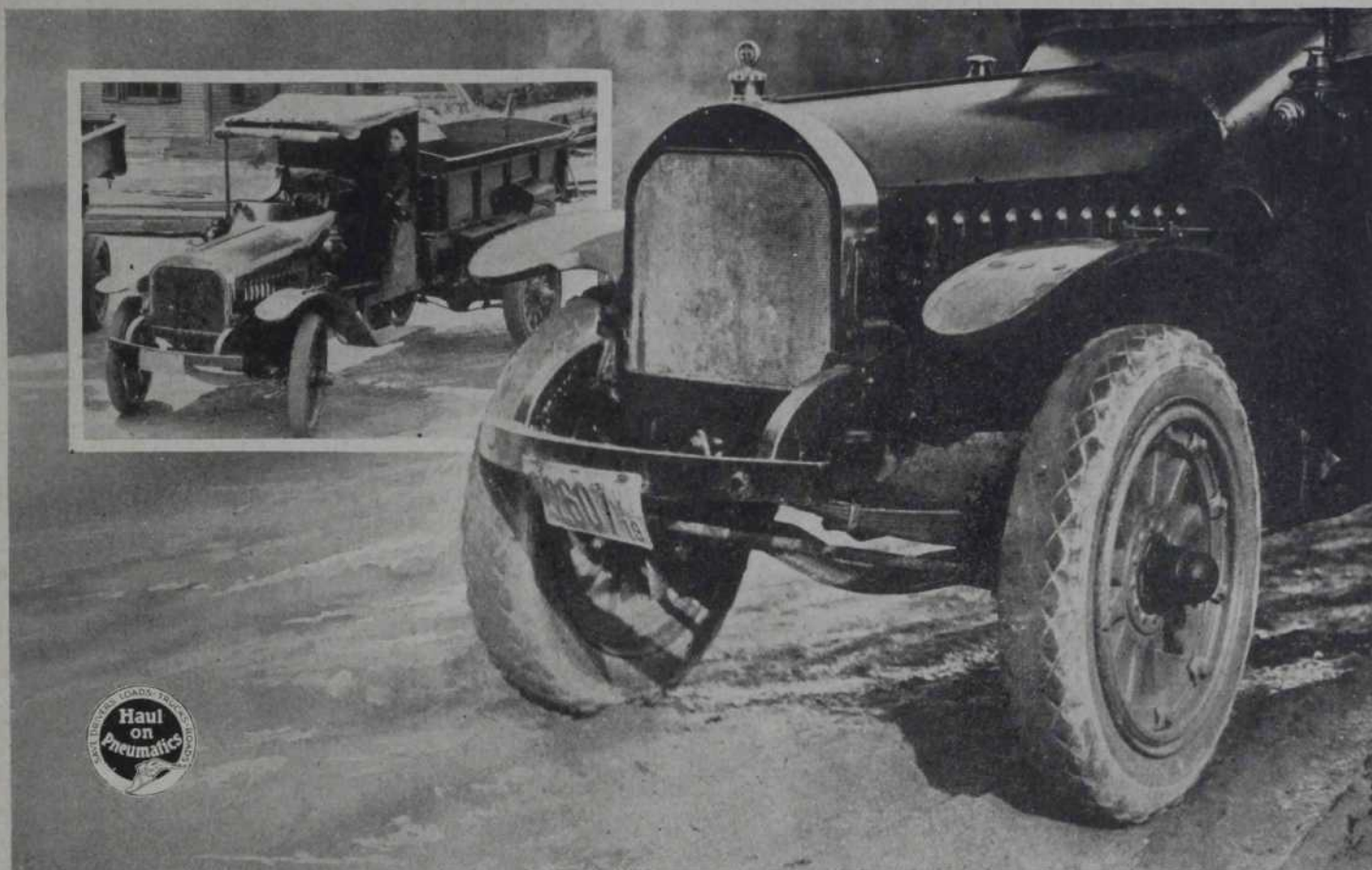
ACCORDING to *The Shoe Economist*, the shoe industry is having the worst slump that it has experienced in some years. And this is occurring at a time when shoe factories should be running full speed on orders for fall and winter.

This publication, with other shoe-trade papers, is alarmed over the fact that shoe merchants are delaying purchases of their fall and winter stock. Purchases of shoes and leather cannot be indefinitely postponed without risk of trouble says *Hide and Leather*. It takes time to make and deliver shoes. Consequences will be bad if retailers wait until the last minute and then crowd into the markets expecting delivery when wanted.

One buyer for a large British firm is quoted in *Hide and Leather* as predicting considerably higher prices this fall, both for shoes and leather because of this abnormal situation. He feels that domestic and foreign buyers may wait about so long and then all rush into the market together, bidding against each other.

The Shoe and Leather Reporter sees a ray of hope for the shoe manufacturers in the export trade. While at a low ebb at this time, it says, Europe is badly in need of our leather and shoes. Sooner or later the temporary check upon our foreign shipments will be overcome.

This belief is also shared by *Shoe and Leather Facts*, which says that the steadily improving rate of exchange certainly gives promise of largely increased exports of shoes, leather, findings and other commodities.



Copyright 1920, by The Goodyear Tire & Rubber Co.

During a test period of six months the Elias Lyman Coal Company, of Burlington, Vermont, kept an exact record of the costs of operating twin two-ton trucks, No. 2 on solid tires and No. 4 on Goodyear Cord Tires. While this 46-year-old concern had been specifying these pneumatics on new trucks for some time, the test was used to furnish a concise summary of the increases and savings effected by them over solid-tired operation. This summary, given below, is particularly interesting because it points out advantages of the Goodyear Cord Tires demonstrated under conditions such as quite frequently offer the solid tire its best opportunity: dense, heavy loads, short hauls, fairly good city pavements.

| | Difference in favor of pneumatics | Total value of extra work or saving |
|---------------------------------------|-----------------------------------|--------------------------------------|
| Miles traveled..... | 38.9% increase..... | \$385.47 (Extra tonnage plus saving) |
| Miles per gallon of gasoline..... | 23.9% increase..... | 42.08 saved |
| Miles per gallon of cylinder oil..... | 30 % increase..... | 1.25 saved |
| Labor cost per mile (drivers)..... | 25.9% saving..... | 256.74 saved |
| Maintenance and repairs per mile..... | 70.5% saving..... | 49.62 saved |
| Operating cost per mile..... | 21.9% saving..... | 389.02 saved |

The last column represents the difference between the actual cost of the work done by the pneumatic-tired truck and the cost of the same amount of work done according to the average rate of cost shown in the solid-tired truck's record for six months

Further cost data of this kind accumulated by The Goodyear Tire & Rubber Company while pioneering the pneumatic truck tire can be secured from the general offices at Akron, Ohio, or Los Angeles, Calif.

GOODYEAR



CORD TIRES

Convenience

Situated on the Public Square, the Hotel Cleveland is convenient to all activities of the city.

It is at the intersection of south, west and east bound street car lines—the terminal of the Interurban service—and in closest proximity to the main railroad stations.

It is the hotel of convenience for the business man.

Hotel **Cleveland** *Ohio*



The Terrible Trade Associations

TRADE ASSOCIATIONS are a pet aversion of some members of the Federal Trade Commission's staff. One of them, when recently called before a Congressional committee to give information about shoes and prices of shoes, showed relatively little interest in the main topic of the hearing and used the occasion for exposition of his ideas about trade associations. His theory is that the chief purpose of trade associations is to establish and maintain high levels of prices. To clinch the matter he used a beautiful Scotch argument, that every trade association which has been thoroughly investigated has had something wrong with it, and those which have not been found illegal have merely not been investigated thoroughly enough.

Such an argument indicates a degree of imperturbability that is proof against both fact and logic. Illegality in purpose or act upon the part of an individual or an association should be promptly and effectively met by the agencies charged with enforcing our laws, but conviction without trial, and solely upon the sort of argument that in an earlier day caused witch-burning, is a trifle obsolete, to say the least.

St. Louis' Drug Record

THAT doesn't mean the number of addicts. It means a real industrial record for 1919 in the drug and chemical industry. This industry had a big war-boom, but has kept right on since the war. Sales for 1918 amounted to \$37,500,000, but sales for 1919 topped them, amounting to about \$49,000,000. 1920 heralds the opening of the United Drug Co. plant which is to cost \$5,000,000. Sulphuric acid, zinc chloride, and benzoid are some of the leading items sold heavily.

Chemicals used in photography, ammonia and flavors for soft drinks are also brisk sellers. The St. Louis chemical industry supplies some 4,000,000 persons. Patent medicines—is it because of prohibition?—go to about the same number. The fertilizer industry caters to 1,000,000 farmers.

Packers in China

THOUGH cold storage and meat-packing be assailed in the United States, the Chinese seem to be welcoming both processes to the Land of the Poppy. Work on a \$500,000 cold storage, meat packing and egg albumen plant has been started at Tientsin, China, by the China Mongolia Export Company, Inc., an American concern. A modern slaughter house with stockyards will also be installed. The site, in the Russian concession, comprises 6 acres.

At first cold storage and albumen and ice manufacture will be undertaken and later packing and canning of meats and poultry. Two 50-ton ice machines will be installed. A representative and engineer of the American concern that furnished the total machinery of the plant, 200 tons in all, are on the ground supervising its erection.

Making Perfect Girls

A LARGE number of girls organized by the St. Louis Chamber of Commerce for the purpose of remodeling and repairing old clothing have added to their work a study of food values and well-balanced meals. By measuring and by proper selection of foods they are attempting to reach and retain their normal weight.



Electrified!

Across the broad pages of history, the United States Navy has written the record of another memorable achievement.

By supplanting steam power with that ever-amazing force—electricity—it has revolutionized warship propulsion and design.

The superiority of the Tennessee, the latest great sea warrior to fly the Stars and Stripes, lies not so much in the weight of her guns and armor as in the all-around efficiency as a fighting

craft which electric drive has largely made possible.

In this epochal change from steam to electricity, Westinghouse has given the Navy all the aid that its long electrical experience has made possible.

Besides electrifying the 32,000 horsepower Tennessee, Westinghouse is now building electrical equipment for two more battleships of her class, four mightier men-o'-war and two fast battle-cruisers.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
East Pittsburgh, Pa.

Westinghouse

ELECTRICAL EQUIPMENT FOR MARINE SERVICE

B



Cleveland's oldest department store installs the L. B. Card ledger—

The above photographs show the card ledger and billing departments of the Higbee Company, Cleveland. This installation, which replaces a hand posted loose-leaf ledger, is one of the most efficient department store installations in the country.

It is refreshingly efficient because it does what every department store and in fact what every business is begging for today:—*it gets the statements out-on-time!*

It must be obvious that the sooner the statements go out, the sooner the money comes in—the less the executive heads of the business have to worry about tight money, bank loans, and 20% reduction sales.

Never before has the value of a machine posted L. B. Card ledger been more strikingly apparent than right now. We shall be glad to give you full details of its success in department stores, in banks, in businesses of every description.

Write for sample cards and literature

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FOREIGN OFFICES
Birmingham Cardiff

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"Have a Glass of Yaupon?"

THERE isn't much chance that Henry Smith, American householder, will ever grow his own tea or coffee. But there is a possibility that some day he may have in his front yard a native plant that will act as a decorative hedge and at the same time furnish the family with an invigorating and stimulating drink. The leaves that Henry Smith cuts off in trimming the hedge will find their way into the family pot—or into the cups which help Mrs. Smith entertain her friends at afternoon tea.

The plant has not been discovered; it would be more nearly correct to say that it has been recalled. It is "Yaupon," a drink that was dear to the southern Indians of 200 years ago. It is brewed from the leaves of *Ilex vomitoria*, a native species of holly found along the coast from Virginia to Texas. The plant is sometimes called "cassine," but its kinsman, known to botany as *Ilex cassine*, hasn't its chemical worth.

Chemically the drink the Indians called "Yaupon" is substantially the same as "Mate" which 20,000,000 South Americans consume daily.

In fact, "Mate" has been highly recommended to us as a substitute for beer, and is already featured in the new and dealcoholized drinkeries set up as successors to the saloon in New York and other cities. Its devotees claim that it has all the exhilarating effect of good beer and more without any discomforting after effects. The drink is only moderately known outside of Brazil, Paraguay and Argentina; yet the first country exports annually about \$10,000,000 worth of *Yerbe Mate*, the tea-like ingredients for making it.

Government chemists have found that our "Yaupon" is just as good. Chemically it is almost identical.

It Has a "Kick"

THE domestic plant, whose full potentialities have just been discovered, is, like the South American species, a caffeine producing plant. It yields virtually the same amount of that stimulating drug, about two-thirds as much as does the tea plant, and more than comes from the average grades of coffee berries.

The discovery grew out of an investigation suggested by the Chemical Committee of the National Council of Defense just before the close of the war. It was undertaken for the purpose of trying to develop new sources of caffeine for chemical and industrial uses; for war conditions had greatly hampered the getting of supplies from foreign sources, like tea dust, depended on prior to the war.

Thoughts of scientists who undertook the job turned to the American plant because of the frequent mention made by early Spanish explorers of the importance attached to "Yaupon," or "Black Drink," by the Indians they found living in Florida and the Carolinas. Records left by those explorers show that the Indians used the drink as stimulant and food, and in highly ritualistic religious ceremonies, very much the same as several tribes of South American Indians used *Yerbe Mate*. The aborigines used to go on long marches with no other food, for they insisted that the drink had peculiar strength-sustaining powers.

Early settlers in the south adopted the drink, but for some reason virtually none of them now consume it. Among those who used to, however, there was a fixed belief that it not only supplied all craving for alcoholic stimulants but also destroyed one's taste for them. A similar claim is made for "Mate."

The plant from which "Yaupon" may be

...and at three historic banquets

A fact:

Within a single week last fall, great civic dinners were tendered at the Waldorf-Astoria, New York, to General Pershing, to Herbert Hoover and to Cardinal Mercier. And at all three of these famous banquets, the only cigarette served by the hosts was Fatima.

Liggett & Myers Tobacco Co.

FATIMA

A Sensible Cigarette

"Just enough Turkish"

A few years ago, the "proper" thing on state occasions such as these, would have been an expensive, fancy-boxed, straight Turkish cigarette.

Today, things are different. Men base their choice on taste rather than price.

That Fatima should be so clearly the choice of men who can afford anything they like, shows that most smokers really prefer—not too much Turkish tobacco in their cigarettes nor too little—but "just enough Turkish."



ALL OVER the WORLD

the quest for Petroleum
goes on constantly and
"Oilwell" Machinery is
conducting this search.

Test Well for Oil in England



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When the British Government decided to make an official test for Petroleum in England, "Oilwell" Experience was called upon to furnish the drilling equipment.

We are Specialists in Oil and Gas Well Supplies

and our experience in manufacturing supplies for the oil country dates back to the drilling of the First Oil Well in America in 1859.

If it is for
the
oil country
we
make it



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made grows wild in sufficient quantities, say the experts, to supply the leaves in big commercial quantities. They believe it can be improved under cultivation, which has never been attempted but will probably soon be undertaken experimentally by the United States Bureau of Plant Industry. The caffeine yield from the leaves varies in different sections, falling to as low as one-half of one per cent in some and rising to nearly 2 per cent in others. The best specimens were found in Texas.

It should make, say the specialists, a very good ornamental hedge plant, whereby the trimmings could be used as a source of commercial caffeine or as a table drink—provided tastes were adjusted to it. Like most stimulating beverages, one might have to cultivate a "taste" for it. However, they say, it isn't particularly disagreeable to the beginner.

The *Ilex vomitoria* is only one of many American wild plants now scorned, which government specialists say possess food, beverage or economic opportunities.

"Doctor of Business"

THE University of London has set an example for other countries in establishing Degrees in Commercial Subjects. They explain the reasons for this as follows:

"The cause of commercial education has been sadly hampered in this country in the past. Too often Education, in the person of the Public School-University man, has regarded the Church, the Law, the Army and Medicine as the only possible careers, and has looked upon Commerce as something remote and unworthy of consideration, with slight reservations in favor of banking, insurance, and the selling of motor cars. The business man has responded by regarding higher education merely as a pretty toy. Both are a little right; both are a great deal wrong. The schoolboy has never had Commerce presented to him in its true light, and its essential importance as a foundation of our world-supremacy, its fascinations and its possibilities have never been brought home to him.

"The University has decided to grant the Degree of Bachelor of Commerce to candidates who pass the necessary examinations after a course of study lasting normally for three years. Those who desire may afterwards proceed to the Degree of Master of Commerce, but only after a minimum of two years' satisfactory practical experience in the particular trade or industry taken up.

"Examinations will be three in number: (1) Matriculation, or some examination recognized as its equivalent. This is intended simply as a proof of the candidate's standard of general education. (2) Intermediate. This includes five compulsory subjects: (a) Elementary Economics. (b) Banking, Currency, Trade Transport and Finance. (c) Geography. (d) Accounting or World-History. (e) An approved modern foreign language; and one optional, selected from a second foreign language, chemistry, physics, geology, botany, mathematics, history, English, commercial art. The normal duration of study for the Intermediate Examination will be one year. (3) Final—The first year's course of study for this examination comprises four compulsory subjects: (d) Organization of Industry, Banking, Trade and Transport. (b) Modern Economic Development of the Empire and of the chief foreign countries. (c) Elementary Commercial Law. (d) Statistical Method. The second and final year is devoted to special-

The Conquest of Constipation Calls for NUJOL

BY C. Houston Goudiss—
National Lecturer on Diet
and Nutrition.

CONSTIPATION must be conquered if this country is to have the kind of health needed to maintain the high national standards we have set up; if its commercial leadership is to continue.

A people fifty per cent unfit physically can't make 100 per cent progress. Nine-tenths of our disease is directly or indirectly caused by failure of the bowels to properly perform their function. Poisons that should be promptly eliminated are permitted to remain and plant the seeds of sickness.

The routing of this dangerous foe is easy enough if NUJOL is chosen as the chief weapon.

What is NUJOL?

It is an odorless, tasteless liquid, clear as crystal, which comes from the heart of Nature to help humanity free itself of the most dangerous and deadly of all enemies of health, happiness and efficiency. It is not a medicine, and it has no chemical effect on any organ.

By softening the accumulated mass of body and food waste and lubricating the walls of the intestines, it painlessly prompts normal elimination. It is pleasant to take and absolutely harmless. Even babies swallow it like water. And because it DOES conquer Constipation, it is the first help to be considered in **Sickness Prevention.**

Nujol
For Constipation



HOTEL PENNSYLVANIA

Opposite Pennsylvania Terminal New York

The Public Ought to be Told

There are lots of things about hotel life that I've always thought the public ought to be told. Here, for instance, is a little hint which you may, sometime, be glad you saw and remembered:

If something unsatisfactory happens, back along the line of human connections through which service has to flow, the way to get it right is to *place your complaint high enough*. Don't complain to a waiter or bus-boy, but to a headwaiter; not to a bell-boy or page or porter, when you should put it to the assistant-manager.

In the Pennsylvania and the Statler Hotels you're promised satisfaction. The policies of the business, and the manager's intentions, are to give you full measure of what you're promised. It's a responsibility; and, naturally, the higher you go with your complaint, the more of that responsibility will you find working for you.

Why? Well, waiters and bell-boys change jobs oftener than executives, and are less interested in their jobs. Our "labor turnover" is pretty low, very low for a big hotel; and it is lowest among those employees who can understand and practice our policies—we're always weeding out the other kind. When you make your complaint to a department head, or to someone more responsible than the one who isn't giving you the required standard of service, you'll get action. It's a big part of my job to see that you do.

Speaking of the Pennsylvania, it may interest you mildly to know that in one month of thirty days, we served 262,017 meals—an average of 8,733 a day, and that the average number of registered guests was 2,874. That will help you to see that we have too much at stake to be indifferent about what kind of service you get—because we want to keep up this habit of breaking records.

Emmett



Hotel Pennsylvania, with its 2200 rooms, 2200 baths, is the largest hotel in the world—built and operated for discriminating travelers who want the best there is.

Associated with it are the four Hotels Statler in Buffalo, Cleveland, Detroit and St. Louis; and each of these five hotels makes reservations for all the others. All have private baths, circulating icewater and other unusual conveniences in every room.

An entire block of ground in Buffalo has just been bought, for a new Hotel Statler.

Big, But Not Too Big

THIS is a large trust company—one of the largest in the country. It is equipped to handle, and does handle, trust and banking matters of the weightiest importance. Some of the city's and nation's greatest business enterprises do the bulk of their banking with this Company.

BUT, notwithstanding the great size of the Bankers Trust Company and the large number who transact business with it, the Company does not lose contact with its individual clients. They look to this Company for constructive help in their individual business affairs and they are not disappointed.



"A Tower of Strength"

BANKERS TRUST COMPANY

Member Federal Reserve System

NEW YORK CITY

Resources Over \$400,000,000

ization, each candidate selecting a group of subjects appropriate to the industry in which he is engaged or which he proposes to enter.

"An important feature of the scheme is the provision for those business employees and others who wish to receive training in one or two isolated subjects. A man, for example, about to be sent by his firm to open a branch in a foreign country, would very likely have all the business details at his fingers' ends, but might lack the necessary knowledge of the appropriate language. It would be open to him, on payment of certain fees, to attend the classes in this one subject alone."

Profits and Prices

By L. D. H. WELD

A BUSINESS MAN and a United States Senator recently had a discussion about profiteering:

SENATOR: The trouble with this country is that so many of our industries are profiteering. They keep charging higher and higher prices. They are sucking the life out of the people of this great country of ours. They are pirates. They ought to be content with a reasonable profit and charge accordingly. (*See Congressional Record, any issue, for additional rhetorical phrases.*)

BUSINESS MAN: It is true that many industries have been making large profits, but there are one or two things that I don't just understand about your ideas. Do you mean that you would have a successful business man charge less than the going market price—less than he can get for his article, so that he won't make such a large profit?

SENATOR: Yes, of course.

BUSINESS MAN: All right; let's see where that leads us. Suppose I'm making an article for which I can get one dollar. That's the market price. That's the price that will just clear the available supply into consumptive channels. Suppose, because of my superior ability, better organization, greater experience I can afford to sell this article for 80 cents, and still make a decent profit. You think I ought to be forced to do so?

SENATOR: Yes.

BUSINESS MAN: How would you force me?

SENATOR: Well, I don't know, but it ought to be a crime for you to make more than a certain per cent.

BUSINESS MAN: Suppose I were forced to. Maybe you'd be the fellow who bought my article for 80 cents, and maybe you'd take it around the corner and sell it for one dollar, the regular market value.

SENATOR: Of course I wouldn't.

BUSINESS MAN: No, of course not, but someone else would, and who'd be the better off?

SENATOR: Well, you ought to sell it to some one that's going to use it.

BUSINESS MAN: But maybe I sell my goods through a jobber. Not to embarrass you further along that line, let's take another tack. Suppose I were forced to sell my article at 80 cents, what would become of the fellow who just breaks even by selling at a dollar?

SENATOR: Well, I suppose that the less efficient would be driven out of business, and I guess that would be a good thing.

BUSINESS MAN: Yes, but doesn't the country need the production of this other fellow? You say that what we need is greater production. Besides, I might get a monopoly, if all the less efficient are driven out of business.

SENATOR: (Couldn't think of a quick answer.)

Branch mail-order warehouse for Montgomery, Ward & Co., now under construction at St. Paul. Floor area 875,000 sq. ft. Main section 9 stories and basement—Tower 50x50x250 feet. W. H. McCaully, Engineer of Construction.



Seven Times We Have Built For This Client Six Repeat Contracts on the Fixed-Fee Basis

ON University Ave., St. Paul, Montgomery, Ward & Co's branch mail-order warehouse, shown above, is rapidly taking form.

In 1909 we added five stories to their Chicago building and subsequently erected their Kansas City branch and large additions at both cities.

Today we are building a factory at Springfield, Ill., and branch plants at Portland, Ore., and St. Paul.

Unswerving loyalty to the owner's ideals, constant watchfulness over costs and a record for getting work done on time have accounted for each contract.

As you select an able builder for similar continued services you will avoid new personal equations and will have all the advantages of an ably manned construction department without its overhead cost between operations.

YOUR banker will say some day soon, "We are now able to handle your loan." Will you be ready to act at once?

We suggest that your architect complete plans, that you make a Fixed-Fee contract with us, subject to financing and a satisfactory cost estimate, and that we make a careful quantity survey. You will be obligated only in the event that it becomes possible and wise for you to build.

When that time comes the preliminaries will be over with and we can give you a revised cost estimate within a few hours. Upon your approval we can then make first call on materials, labor and equipment. Every advantage of lower prices will accrue to you.

We will be glad to outline this plan to you and send you copy of our contract without obligation.

"Wells
Built
Means
Built
Well"

Wells Brothers
CONSTRUCTION CO.
MONADNOCK BLOCK CHICAGO

Builders
in
Steel
and
Concrete



SELLING 'neath SUNNY SKIES

Those who "See America First" never miss seeing California, any more than tourists in Switzerland would fail to enthuse over the grandeur of the Alps. California has plenty of sunshine, lots of success and a "get up and go to it" spirit that any state would do well to pattern after.

In Los Angeles they put motion in pictures and merchandise in motion.

The 5th St. Store has been in business about 12 years. It has always adhered to the soundest principles of merchandising; its growth has been steady. The present establishment occupies over 142,500 sq. ft. of floor space, employs 700 people and is a busy concern six days a week.

The *Sperry* Service was introduced in 1909, and the *SN* Green Stamp is today looked upon by this concern as a most effective and consistent cash trade producer.

The 5th St. Store is another link in the chain of evidence offered to prove the value of the *Sperry* Service in "Up-to-Date" retail selling.

The Sperry & Hutchinson Co.
114 Fifth Avenue New York

BUSINESS MAN: Another thing; if I sell at a dollar, what do you suppose I would do with the extra 20 cents profit? Spend it in riotous living?

SENATOR: Whatever you do, it has enriched you at the expense of the public.

BUSINESS MAN: No, sir; I'd do what other business men do. I'd put it back into my business to buy a new boiler, build an addition to my factory, or buy a greater supply of raw materials, so as to increase my production and give more employment.

SENATOR: You might not—you might pay it out in dividends.

BUSINESS MAN: But what would my stockholders do with the dividends? You know as well as I do that they would reinvest them (or a large part of them) in securities, which means that they go back into industry, and increase the productive capacity of the country.

SENATOR (after a long pause): Well, after all is said and done, something ought to be done. (To himself) Besides, I've got to get reelected if I can.

Lots of People Think That Way

HERE endeth the dialogue. But the Senator's views represent the views of 90 per cent of the people, so it's a mighty serious matter.

The simple fact is, strange as it may sound, that the concern making big profits tends to reduce prices, rather than raise them! And for the reason stated above. In any competitive industry, there are concerns of varying degrees of efficiency. Some make small profits. Others make large profits.

The large profits of the most efficient concerns are not frittered away. They go back into industry, and increase production and increased production means lower prices. Furthermore, these most efficient concerns, tend to reduce prices in another way. They set the pace in competition. They are the ones who can afford to "shade" the price, when a large order is at stake. When conditions of supply and demand warrant, they take the lead in reducing prices. Now this may all sound kind of cold and heartless, but it's solid business and sound economics.

Some concerns undoubtedly find it good, long-run business policy to sell at slightly below the market, so as to retain the good-will of customers, and so as to avert cancelled orders when the market begins to fall. But this policy has practically no effect on the general price level, and it is possible only in a business whose margin of profit is a substantial part of the selling price of the goods.

Another thing, when large producers sell, or are forced to sell, below the market, that means that the available supply is used up too rapidly; there is not enough to go around; some one, perhaps some whole locality, has to go without.

On the whole, it's not only good business, but it's good economic policy for all concerns to sell "at the market" and let the big profit makers reinvest their profits and thus furnish the wherewithal to increase production—except so far as the government takes over these profits by taxation.

There is still another point to be borne in mind. Profits are not such an important factor in prices as most people think. The hypothetical case assumed in the dialogue with the senator would be extremely rare. There are very few cases where even the most efficient concern could sell a dollar article for 80 cents, by cutting out its profit.

If the profits of the most efficient flour millers, wholesale grocers, meat packers, were

Tycos

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PROGRESS

WHERE there's a temperature problem there's a Tycos Temperature Instrument—Indicating, Recording, Controlling—to meet it.

As industry forges forward and new problems present themselves, the master brain and master hand of the Tycos organization are marshalled to find, in each case, a practical, economical and efficient solution.

Thus we do keep step with the onward march of American industry. And thus do we serve those who mould the refined and the useful from the crude and the undeveloped.

We are always ready to apply our knowledge and experience to the solving of temperature difficulties. What is your problem?

Tycos Products include:

- Indicating Thermometers
- Recording Thermometers
- Controlling Thermometers
- Pyrometers
- Pressure Gauges
- Vacuum Gauges
- Time Controls
- Hygrometers
- Hydrometers
- Barometers
- Thermographs
- Altimeters
- Oil Test Instruments
- Household Thermometers
- Actinometers
- Laboratory Glassware
- Compasses

Taylor Instrument Companies
ROCHESTER, N.Y.

There's a Tycos or Taylor Thermometer for Every Purpose

In other words

Camels supply everything
you hoped for in cigarettes!

Camel CIGARETTES

YOUR taste will prove that in quality, flavor, fragrance and mellowness Camels give you a real idea of how delightful a cigarette can be! You will greatly prefer Camels expert blend of choice Turkish and choice Domestic tobaccos to either kind of tobacco smoked straight.

Camels hand out satisfaction you never before got from a cigarette. They have a wonderful smooth but satisfying mildness yet that desirable body is all there! And, Camels are so refreshing they do not tire your taste!

Another feature about Camels—they leave no unpleasant cigaretty aftertaste nor unpleasant cigaretty odor.

Camels superiority is best proved by comparing them with any cigarette in the world at any price. You realize then as you never did before just what quality can mean to a cigarette!

Camels are sold everywhere in scientifically sealed packages of 20 cigarettes for 20 cents; or ten packages (200 cigarettes) in a glassine-paper-covered carton. We strongly recommend this carton for the home or office supply or when you travel.

R. J. REYNOLDS TOBACCO CO., Winston-Salem, N. C.





at Looking for it!

YOU look *FOR* cards when they're hidden away one behind the other in card drawers, and sometimes you look for them a long time when they're mis-filed. You fumble over a dozen cards to find one.

But you look *AT* records in Kardex. The name or title is always in plain sight. A glance locates the card you want—a flip of the finger shows you the required data. You make entry or get data from either side of the card without removing it. That means no possibility for mis-filed or lost cards.

The speed and ease of locating cards in Kardex saves 50% to 75% of time. Instant accessibility of Kardex records encourages their use in planning and deciding. No guess work, no oversight.

Kardex will accommodate your present cards. The change from card drawers to Kardex is easily and quickly made.

It is costly for you to look *FOR* records. Look *AT* them in Kardex. Write for further details.

KARDEX

Cards in Sight

AMERICAN KARDEX COMPANY

Main Offices and Factory: Tonawanda, N. Y.

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MINNEAPOLIS
NEW YORK
PHILADELPHIA
PITTSBURGH
SALT LAKE CITY
SAN FRANCISCO

SEATTLE
ST. LOUIS
SYRACUSE
WASHINGTON, D. C.
TORONTO, CAN.
LONDON, ENG.

entirely eliminated, there wouldn't be any noticeable difference in the prices of the commodities they sell. High prices are not caused by profiteering. The best way to reduce prices is to increase production, or to reduce consumption by practicing thrift.

From what has gone before, it is obvious that the mere taking of large profits on the part of efficient concerns is not improper, although the public looks with abhorrence upon any concern or individual who seems to be making big money. What then is illegitimate or improper profiteering?

Profiteering is improper and harmful when it results from any of the following practices:

1. When there is a monopoly, or a cornering of the market, which means an ability to manipulate prices artificially;
2. When there is fraud or deception or misrepresentation of goods;
3. When unfair trade practices are resorted to.

We all agree that profits resulting from monopoly power are improper and are bad for the community and we all believe that monopolies should either be prohibited (which is the principle on which the Sherman anti-trust law is based), or that they should be regulated (as we do our public utility corporations). If there are any private industrial corporations which in spite of the Sherman law are found to have power to control prices arbitrarily, they should be regulated.

As for fraud and misrepresentation, the standard of commercial ethics is such that there is relatively little profiteering from this cause in modern times. There are certain fraudulent practices, however, which have not yet been overtaken, by our constantly rising standards of business ethics, but which will have to disappear as time goes on.

As for unfair methods of competition, we are not ready yet to define just what this term means. We are pretty well agreed that underselling in one community and overcharging in another is a form of unfair competition, in fact, it is prohibited by the Clayton law. The use of spies to obtain information about competitors' business, or the hiring away of competitors' employees for the purpose of getting business secrets, should undoubtedly be considered unfair competition.

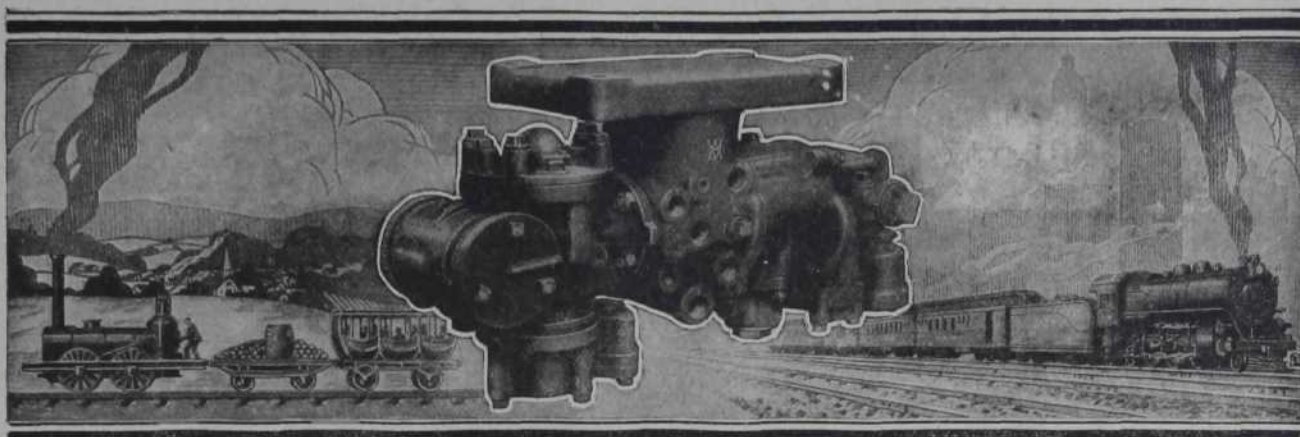
It is obvious that high prices in general are not due to the making of large profits on the part of efficient producers. Neither are high prices in general due to profiteering, although there undoubtedly are individual instances where a manufacturer or trader profits from one or more of the improper practices enumerated above.

Stick to the Text

FOREIGN addresses of the modern sort exceed the comprehension of some of our compatriots. A well-known American publication insists upon addressing a London subscriber, whose office is in Whitehall, S. W., at Whitehall, South Wales, to the annoyance both to the subscriber and the postal service by land and sea.

The mystic symbol "W. I." on the address of the American embassy to the Court of St. James has caused a fellow citizen, or his stenographer, to try to communicate with the American Ambassador in the West Indies.

The letters and numerals that are appearing in local addresses in large cities should be reproduced as they stand, if happiness of mind all around is to be cultivated. They indicate postal districts, and are of real assistance in speeding letters to their destinations.



P R O G R E S S

At a speed of 60 M.P.H., a train consisting of a locomotive and 12 cars represents 300,000,000 FOOT-POUNDS OF ENERGY. It is almost inconceivable that this Energy can be dissipated in a distance of 1200 feet.

The AIR BRAKE achieves this stupendous task in the space of 20 seconds and the passenger is barely conscious of its operation, such is the QUIET CERTAINTY of its PERFORMANCE.

The Westinghouse Universal Pneumatic Brake Equipment Schedule UC

Is the most POWERFUL AND COMPLETE passenger car BRAKE. It operates in harmony with previous types of Pneumatic Brake Equipment and only one size UNIVERSAL VALVE is used for all weights of cars and sizes of Brake Cylinders.

Ask for Publication No. DC 2021.

WESTINGHOUSE AIR BRAKE CO.

GENERAL OFFICES AND WORKS, WILMERDING, PA.

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Operating Efficiencies,
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Security of Investments.

43 Exchange Place
New York, N. Y.

Letting Down the Bars for the Farm Organizations

ASSOCIATIONS or producers of agricultural products are authorized, according to the title of a bill which the house of representatives passed in May. Such a title is a bit perplexing. Associations or producers of agricultural products, or any other products, already have good enough authority. Americans have a genius for association. Heretofore the lawmakers have felt constrained to provide merely that certain purposes were prescribed.

As the title of the bill has no apparent meaning, one must look for light in the following text. There it appears, first, that producers of agricultural products are farmers, sugar cane growers, cotton growers, wool growers, cattle raisers, dairymen, and fruit growers. Timber growers are excluded, but our ostrich ranchers of the southwest and our fox ranchers of the northeast would appear to come into the category of agricultural producers. About the status of oystermen and fish-planters generally there would seem to be some doubt. Poultrymen, too, are left out.

Although the reasons for some of these distinctions, literally, between flesh and fowl and between bread and fish, are no clearer than the title of the bill, the purpose becomes plain. Persons coming within any of the descriptions, or all persons in all of the descriptions, may form associations or corporations for the processing and marketing of their products, with two limitations. Such a corporation may not pay dividends exceeding 8 per cent, and if prices to the public are unduly enhanced the secretary of agriculture may order them reduced. As for the anti-trust laws, they become non-extant for the organizations that are in prospect.

Even though this general purpose is clear, its application is not altogether without ambiguity. Apparently, the coffee valorization scheme got up in Brazil some years ago, and stopped by the Department of Justice after special amendment of the anti-trust laws by Congress, could once more flourish under the bill.

But one does not need to look abroad to discover the possibilities of interesting situations under the bill. The ancient game of "freeze-out" would apparently be legalized; for the bill contains nothing to prevent one group of "agricultural producers"—say, of prune growers—from getting together large financial resources and decreasing prices for the purpose of putting out of business another group of individuals who desired to remain independent.

The Senate Committee on the Judiciary sought to correct some of the defects in the bill, by outlawing any attempt to create a monopoly and by making the associations and corporations in question subject to the Clayton Act's scattered provisions regarding unfair methods of competition, but without applying the general powers of the Federal Trade Commission. In that form the bill stands upon the Senate Calendar, ready for consideration at the next session of Congress, and an excellent example of the possibilities of a measure that begins with an obscure title.

"The Business Man's America"

THE series of stories on the states by Mr. Archer Wall Douglas will be resumed in the September issue of THE NATION'S BUSINESS. The subject of the next article will be the state of Texas.



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Modern Maps

—also a systematic, business-like method of displaying them

National Maps are modern in every respect. Their transparent water-proof surface—an exclusive feature of National Maps—makes it possible to erase, quickly and completely, any marking made thereon. Use either a sponge or damp cloth, and wash the map as you would a slate or a blackboard.

National Maps are more than mere commercial maps—they are business scoreboards upon which you can mark the daily developments in your business. Outline your dealers' territories and salesmen's routes, put down sales quotas, comparative standings, and other important statistics. You can use pencil, pen, crayon or water color paints. The washable surface enables you to make changes and corrections whenever necessary. As the maps are mounted on heavy compo board, colored tacks may also be used to advantage.

National Maps are large scale, accurate, and dependable. They are the only maps that show township boundaries. The complete index makes it easy to locate even the smallest town.

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Some Well-Known Users

Many of the largest business organizations in the country are using the Multi-Unit System of Washable National Maps.

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Overcoming Handicaps to Production

THE curtailment of credit, the high cost of building; the difficulty of getting coal; and the general scarcity of labor, are some of the handicaps to production among manufacturers today.

How are you going to meet these problems?

There is only one way: By *getting greater production* from your present facilities, and by *knowing* that you are *making a profit* on every article produced.

| 50 | | 80 | | JOB CARD | | 447 11055 1 | | 7/70 | |
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A World League of Business

Industrial and commercial leaders of the great powers meet in Paris and successfully launch the International Chamber of Commerce



Do your welders Wear "L1" goggles?

Why not find out!
Only a detail, but
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Style L1, or The Willson Triangular Welding Goggle, comfortably protects the welder's eyes, increases his output, and practically eliminates eye-risk.



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BUSINESS MEN throughout the United States will be interested in the announcement from Paris that the International Chamber of Commerce, projected last fall by delegates attending the International Trade Conference at Atlantic City, has been organized. Offices have been opened in Paris.

A report on the work of the first meeting of the Chamber, held the latter part of June, has just been received by the Chamber of Commerce of the United States, which delegated American representatives to attend the meeting. More than 500 representatives of business organizations in five countries—Belgium, Great Britain, France and Italy—were present when the new organization was created. Other countries will come into the Chamber later.

The meeting gave an unusual opportunity for a discussion of many phases of international business relations. The report received by the National Chamber gives the following summary of the action taken on some of the important subjects considered:

Restoration of international credit, based on fixation of the amount and the conditions of payment for the debts of all countries, allies or enemies, was urged.

It was resolved that allied states should agree also as soon as possible to fix definitely the amount and conditions of payments according to the stipulations in the treaty.

There should be an avoidance of duplicate taxation of wealth of individuals or organizations in more than one country.

There should be reduction of unnecessary expenditures on the part of local and national governments.

Extension of credits, uniform banking laws, and war damages were dealt with.

Reciprocal international treaties relative to import and export taxes were advocated.

An international credit bureau was planned.

National and local chambers of commerce were requested to cooperate with their governments to reduce national and local governmental expenditures.

Governments and banking commercial and industrial associations in all countries were urged to cooperate with the International Chamber and with each other to reduce importation of nonessentials by countries whose exchanges are depreciated and to increase exportations from such countries.

There should be an endeavor to obtain the cooperation of labor to prevent delay in the turn-around of ships, delay between ships and trains, and delay in transportation by rail.

There should be restriction as far as possible upon countries whose exchanges are depreciated issuing foreign loans.

There should be a reconstruction special committee to study the exchange situation.

There should be inducement of foreign investments in home countries.

There should be encouragement of tourists through removal of unnecessary restrictions.

It is desirable to furnish raw material and credits.

There should be facilitation and simplification of passport procedure.

A committee was proposed to investigate the mischievous use of trade names and of misleading indications.

Common nomenclature was proposed for customs tariffs of the allied nations.

Revocation of import and export prohibitions was urged as soon as internal conditions of each country will allow.

A resolution petitions the board of directors to establish a central bureau for international statistics covering production with forecast of output and probable needs of each country.

The world's stock of fuel was discussed.

A resolution urges hastening of utilization of hydro-electric power, development of measures for the use of mineral fuel scientifically and economically, and development to the utmost of research in the extraction of coal and oil resources of the world.

The full meeting expressed an opinion that Germany had not demonstrated an intention to fulfill its obligations to the Allies, as agreed in the Treaty of Versailles. Allied governments were urged to tolerate no further delay in the carrying out of treaty agreements.

The next meeting of the International Chamber will be held in London, next June. Temporary headquarters have been established in Paris. The location of the permanent headquarters is left to the Board of Directors.

The Chamber elected the following officers and directors:

PRESIDENT—Etienne Clementel, former Minister of Commerce in France, and member of the Supreme Economic Council.

VICE-PRESIDENTS—A. C. Bedford, New York City; Baron Edouard Empain, Belgian banker; A. J. Hobson, Sheffield, England; Victorio Polandi, Ricci, Italy.

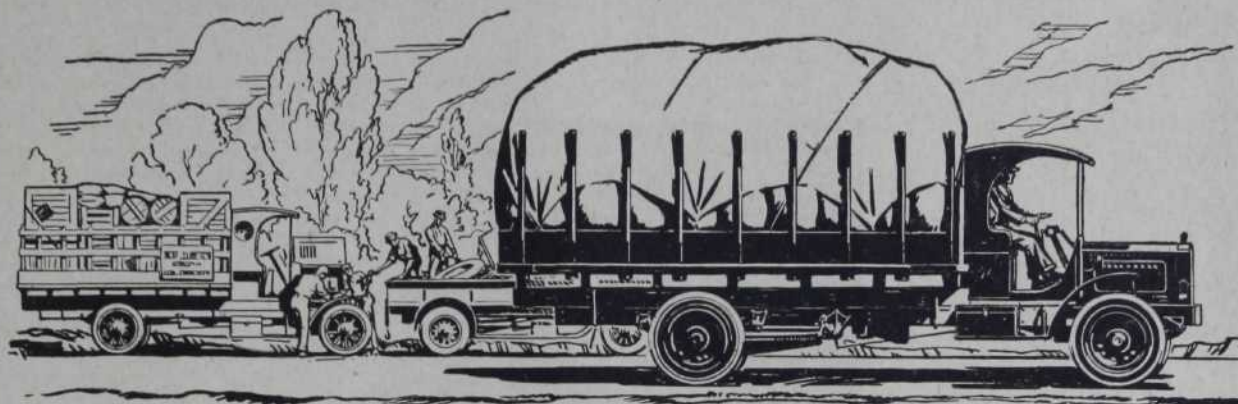
DIRECTORS—For Belgium: Edgar Castelain, William Thys, Canon LeGrand. For France: Eugene Schneider, Georges Pascalis, M. Coignet, of Lyons, president National Association for Economic Expansion. For England: Sir Arthur Shirley Benn, Walter Leaf, president Institute of Bankers, chairman, London County, Westminster & Parr's Bank; J. G. Jenkins, vice-president British Producers Association, and formerly Premier, South Australia. For Italy: Marco Cassin, Luigi della Torre, Senator, president Italian Federation of Banks; Commander Giorgio Mylius, president Italian Master Cotton Spinners and Weavers Association. For the United States: John H. Fahey, formerly president Chamber of Commerce of the United States; Willis H. Booth, vice-president Guaranty Trust Co. New York and formerly vice-president Chamber of Commerce of the United States; Edward A. Filene, president William Filene's Sons Co., Boston, and formerly a director in the Chamber of Commerce of the United States.

The following are alternates: Harry A. Wheeler, formerly resident of the Chamber of Commerce of the United States; William Butterworth, a director in the Chamber of Commerce of the United States; Owen D. Young, vice-president, General Electric Co., New York City.

TEMPORARY SECRETARY GENERAL: M. Dolleaux, Professor of Political Economy at the University of Dijon.

Paying for Their Deep Thought

GOVERNMENT DELAY in making up its mind is a thing which in England does not occur wholly at the expense of the industry that is affected. Because it took British naval authorities seven months to decide they would requisition a vessel which was building, and which meanwhile had to stand as it was, the House of Lords has said that the builders are entitled to recover the damages which resulted to them.



How Little Dollars Save Big Ones

MANY a truck owner has adopted his most profitable transportation ideas from the practice of the great railroads.

On *maintenance*, for example. The railroad sends its rolling stock into the shops every so many miles. Not because something is the matter. But so something *won't be*.

That is how a railroad keeps its rolling stock in prime condition—and the little dollar today saves the big dollar next year.

* * *

"I know that all machinery wears," says the truck purchaser; "but not so much with regular care. What sort of maintenance organization will you place behind my truck?"

Packard has definitely organized its Service facilities

to keep maintenance expense of Packard trucks at the very lowest point.

None but the better mechanics of every trade are employed at Packard Service Stations. They are given machinery that augments their skill and facilitates their work.



TODAY Packard service stations everywhere have in operation Uniform Service Methods—Uniform Stock-keeping Methods—a definite system to eliminate haphazard, time-consuming practice in repair shops.

More than one hundred repair operations have been standardized—workmanship improved and time reduced.

This system is solely Packard. There is nothing similar.

A maximum cost estimate of repairs and replacements is presented to the customer for approval before the work is started.

Of first importance is *expert judgment*. What can a mechanic at half the price save an owner if he takes twice as long to find the trouble?

Packard Service is designed to apply the *ounce of prevention*. Packard understands perfectly that economy of maintenance of its trucks in daily use is the greatest factor in creating sales for new Packard Trucks.

Many Packard owners attend to truck maintenance on a set schedule. *A given day in each month for the truck to spend at the service station.*

These owners reduce maintenance cost—get the fullest advantage of Packard's 44 factors of engineering superiority—receive to the utmost the benefit of the long life built into every Packard Truck.

"Ask the Man Who Owns One"

PACKARD MOTOR CAR COMPANY, Detroit



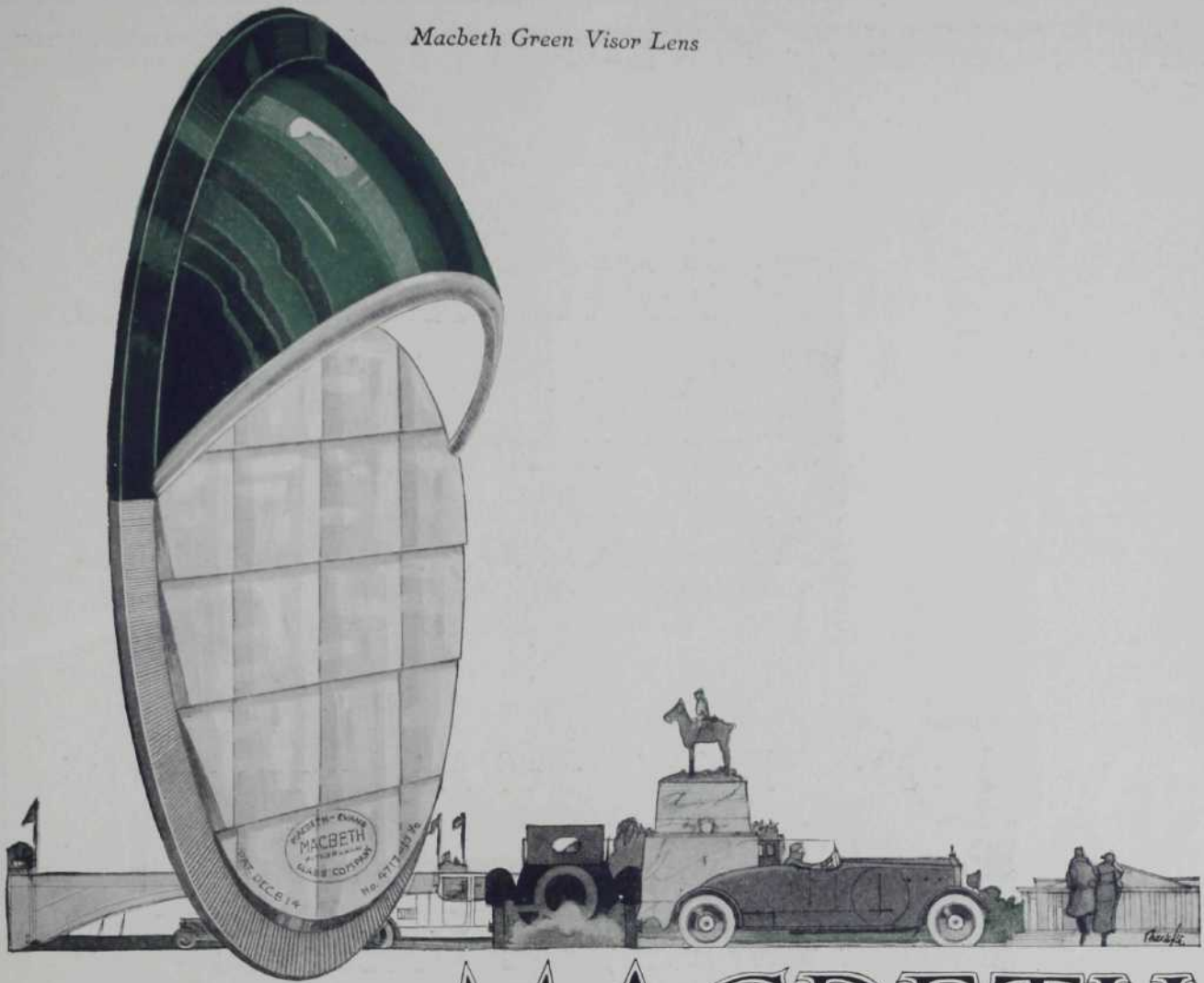
DO NOT allow the high praise given *Silvertown Cords* to make you think they must be expensive. They are best in the long run—cheapest in the end.

Goodrich Silvertown

America's First CORD TIRE

The Goodrich Adjustment Basis: Silvertown Cords, 8000 Miles; Fabric Tires, 6000 Miles

Macbeth Green Visor Lens



MACBETH

A GENTLEMAN'S LENS

Notable!

To the most expensive cars as to the least, Macbeth green visor lenses add a notable touch of elegance and on every car they render notable service. They mark, too, a notable courtesy—the courtesy a gentleman extends his fellows.

The Macbeth permits no dazzling glare to stab and blind the eyes of other drivers. All upward rays are re-directed down at the correct angle *on the road*.

The light is scientifically concentrated in a straight low line of brilliance far ahead and spread uniformly throughout the lighted area. The Macbeth principle of scientific prismatic direction of light is that adopted for safety by the United States for battleships and lighthouses. An impressive endorsement. The endorsement of gentlemen everywhere of the green visor lens is equally impressive. It marks a gentleman's car. Let it distinguish yours.

Price per pair \$5.25—Denver and West \$5.75—Canada \$6
Winnipeg and West \$6.50

Macbeth-Evans Glass Company, Pittsburgh

Branch Offices in
Boston; Chicago; New York; Philadelphia; Pittsburgh;
San Francisco

Macbeth-Evans Glass Company, Limited, Toronto,
Canada

The Next President of the United States

Must be a man who realizes our
TRANSPORTATION NECESSITIES

First: Building of Highways

Second: Railway Requirements

Third: Waterways Usefulness

Fourth: Air Possibilities

It is Imperative !

THE AUTOCAR COMPANY

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ARDMORE, PA.

Manufacturers of the Autocar Motor Truck

First published in Chicago newspapers, June 10, 1920